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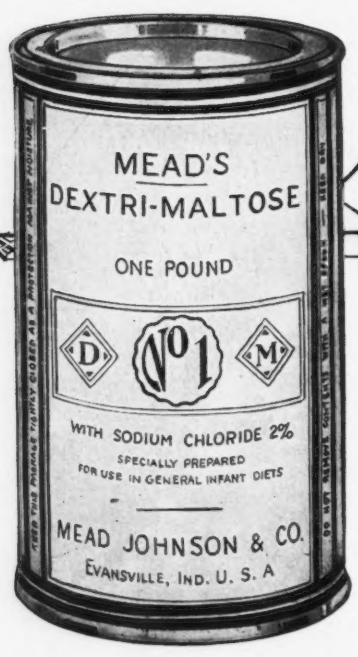

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VOLUME XXVII DECEMBER, 1927 No. 6

THE PELVIC FLOOR—CONSIDERATIONS REGARDING ITS ANATOMY AND MECHANICS*

By A. W. MEYER, M. D.
Palo Alto

INTRODUCTION

AN anatomist hesitates to write on the pelvic floor because the pelvic fascia has been discussed interminably. The subject is worn enough without further words. However, the treatment of it, even in the anatomies of the present day, is inadequate and the clinical literature is very confusing.

When one considers the nature of the pelvic floor of man, one really must wonder at its adequacy. It is not strange that it yields occasionally but rather that it does not do so frequently. When contrasted with the other yielding walls of the peritoneal cavity the pelvic floor, aside from the underlying tissues, certainly seems far weaker than the anterior abdominal wall or the thoracic diaphragm against which it is pitted in its resistance and response to changes in abdominal pressure. Only these three portions of the abdominal and pelvic cavities can yield materially, and since the effect of gravity in the wholly or partially, erect posture is exerted chiefly upon the pelvic floor it has to act under a special disadvantage.

Considerable protection against the direct pressure due to gravity and the downward impulses in the erect posture is obtained from the change in angle from the abdominal to the pelvic cavities. This change causes the downward pressure to fall partly on the lower abdominal wall, the ventral half of the bony pelvis and upon the soft parts lying between the descending rami of the pubes. Did the pelvic cavity lie in a direct line with the abdominal, one well might doubt whether the pelvic floor, as constituted, would be adequate in the adult. It is true that the pelvic cavity of the infant lies in almost a direct line with the abdominal, but the infantile pelvic organs are far more adherent to each other. Were it not for this fact the infantile uterus which often lies in almost a direct line with the vagina, no doubt would be prolapsed early. It is not protected against this accident by its position, for contrary to common belief and teaching it usually is wholly intrapelvic, as shown in figures 1 and 2, and never is abdominal in position at birth. Illustrations in leading textbooks of obstetrics and gynecology which represent it as located almost wholly above the superior straight are plainly incorrect.

Fig. 1—Photograph of a sagittal section of the frozen pelvis of a female infant aged forty-one days.

COMPOSITION OF PELVIC FLOOR

Strange as it may seem there is no agreement even among anatomists on so simple a question as to what structures constitute the pelvic floor. This must be surprising, and is, in fact, rather discreditable. Patterson,[1] 1907, for example, included the symphysis pubis among the structures that compose the pelvic floor. If this be justifiable then, to be sure, the entire pubic bones and the coccyx and sacrum should also be included and so should, in fact, most of the bony wall of the true pelvis. The constitution of the pelvic floor manifestly is not affected by the posture of the individual, and it would seem that it should be regarded as being composed of all the supporting structures that close the pelvic outlet. This would include the peritoneum, and the muscles

*From the Department of Anatomy, Stanford University. Part two of this paper will appear in the January issue of this journal.

Fig. 2—Photograph of a sagittal section of the frozen pelvis of a female infant aged seven months.

composing the pelvic and urogenital diaphragms with the accompanying ligaments and fascial layers.

Symington [2] considered the pelvic floor to include "not merely its muscular diaphragm, but the whole soft structures that close the inferior outlet of the female pelvis"; and Hart [3] included the bladder, even; and Coe,[4] both bladder and rectum. At the present time, however, few anatomists would include the skin and subcutaneous tissues and the superficial fascia as part of the pelvic floor; and I think no one would include any of the viscera, although some of them pass through it.

It has always seemed illogical to me to restrict the meaning of the terms pelvic and urogenital diaphragms to the respective musculatures alone, for the accompanying fasciae are an integral part of them. When we speak of the thoracic diaphragm we do not exclude the fascia overlying the diaphragmatic musculature, but usually also include the peritoneum, the pericardium and the pleurae, which overlie the diaphragmatic fasciae, as integral parts of it. It may seem, at first thought, that the pelvic peritoneum really does not form a part of the pelvic floor because such a conception locates the prostate and seminal vesicles and parts of other pelvic viscera within the pelvic floor itself. However, the greater part of the cavity of the minor pelvis is ordinarily occupied by the small intestine which rests upon the parietal peritoneum. Hence, the latter manifestly forms a part of the pelvic floor anatomically. Moreover, since its reflections form integral parts of the broad and so-called sacro-uterine ligaments and also play an undeniable rôle in pelvic support it also forms part of the pelvic floor physiologically. To object to this interpretation is in effect to say that the visceral pelvic fascia, too, does not form part of the pelvic floor, for it also is reflected over the viscera, thus really placing them below or outside of it. I am aware, however, that prominent British anatomists, Smith,[5] 1908, and Dixon,[6] 1919, have adopted a different interpretation. Smith [5] prefers to regard this extravisceral connective tissue as a capsule, but that does not affect the fact that it is directly continuous with the pelvic fascia. Since all the fascia is differentiated from mesenchyme it would, to be sure, be more correct to say that it is continuous over the viscera rather than that it is reflected over them. Nevertheless, the latter is a convenient term and I presume that no one would conclude that the fascia has an entirely independent origin and existence. Hence, whether we call it fascia or capsule is a matter of no importance as long as the two are directly continuous. Dixon [6] speaks of it as a "subserosa" which again does not affect its essential character, for wherever the fascia is very thin it is difficult to identify it as a separate layer independent of the subserous connective tissue, but the pelvic fascia does not stand alone in this respect.

The skin and superficial fascia and subcutaneous tissues of the perineum had best be excluded from the pelvic floor, although the superficial transverse perineal muscles and the superficial anal sphincter and a portion of the glutei maximi probably should be included. They are very intimately associated with the pelvic floor and give it much local support. Although the skin and superficial fascia also give it some support they undoubtedly play so minor a rôle that they may be disregarded. These structures yield too easily to be of great moment in maintaining the integrity of the floor. Hence it follows that the strength of the latter must depend mainly upon the muscles and fasciae and upon the reinforcements of the latter.

RÔLE OF PERITONEUM

Dixon [6] held that the peritoneum is a negligible factor in pelvic support. If this be correct then the support that such structures as the broad ligaments and the recto-genital folds afford also must be of little consequence in this respect, as is indeed held by some. Although the peritoneum is attached rather loosely to the pelvic wall and also is easily distended, it nevertheless is very firmly attached over considerable portions of the bladder and uterus and forms broad folds about and between these organs. It also comes into relation with the rectum, though less intimately so. Moreover it also holds the obturator vessels and nerves firmly against the pelvic wall. It is only after the peritoneum is detached that these structures are freed and that the nerves stretch straight across the lateral portion of the pelvic cavity as represented without comment in an otherwise excellent drawing by Broedel in Kelly's[7] Gynecology, and reproduced from the latter in an edition of Morris' Anatomy.

Since we readily regard peritoneal folds elsewhere, such as the mesenteries and omenta and

the ligaments of the spleen and liver, as important agents in the support of these organs, I see no reason why peritoneal reflections in the pelvis should be regarded otherwise. Here, as elsewhere, the peritoneum is reinforced by the underlying tissues and comes into more or less intimate relations with the fascia. I am reminded that Eden and Lockyer,[8] 1917, regard the broad ligament as only a name and state that the uterosacral and vesicle ligaments are not definite structures, but I cannot accept this interpretation. Where these peritoneal reflections meet the bladder and uterus and also the rectum they include the well-known fasciculi of smooth muscle. We also know that the peritoneum holds a distended fetal or adult bladder firmly in contact with the anterior abdominal wall, and we generally believe that peritoneal reflections do not play a negligible rôle in the fixation and support of other viscera. Surgeons also long have emphasized the necessity of high ligation of the peritoneal sac as an important factor in the cure of inguinal and femoral herniae, and it is a well-known fact that an intact peritoneum is an important factor in preventing their formation.

That the peritoneum is not a negligible factor in visceral support is splendidly illustrated by the rare cases of congenital absence of the dorsal mesenteric attachment. Although the existence of general abdominal prominence and the yielding of the anterior abdominal wall, especially in the right and left inguinal regions, in these rare cases, may be due in part to an increased distension of the small intestine which is likely to accompany this condition I doubt very much whether this is the main factor. The absence of dorsal mesenteric fusion permits the intestine to sag, thus making direct pressure upon the lower portion of the abdominal wall causing it to yield. In one case which I saw in the course of dissections, this portion of the wall was formed into prominent bilateral welts which overlay the inguinal ligaments and diastasis of the recti was very evident even below the umbilicus.

RÔLE OF THE PELVIC FASCIA

Smith,[5] Liepman,[9] 1914, and also others, attach lesser importance to the pelvic fascia as a factor in pelvic support, and Dixon[6] concluded that the rôle played in uterine support by the fasciculi of smooth muscle in the region of the uterine cervix scarcely can be exaggerated. Yet it seems doubtful that these conclusions are correct. If the peritoneum and such strong portions of the pelvic fascia as the pubovesical ligaments and the tendinous arch or "white line" are negligible, then almost the entire burden of pelvic support depends upon the muscles of the pelvic diaphragm which often are very weak and not infrequently also very deficient in part. This fact is recognized by gynecologists, for Eden and Lockyer,[8] for example, wrote that "the iliococcygeus often is vestigial and the ischiococcygeus a mere fascial remnant." Hence, if the peritoneum and the muscles and the fasciae can each in turn be excluded it is evident that very little else remains to play the rôle of pelvic support.

Although there is no agreement regarding the matter of pelvic support it would seem that the pelvic viscera well may be regarded as supported mainly by a series of three superimposed composite slings or hammocks. The uppermost of these is a unit, and is formed by the peritoneum, the reflections of it commonly spoken of as ligaments, and by the extraperitoneal or subserous connective tissue, including the perivascular, perivisceral and perineural sheaths which reinforce it. The second sling is composed of the pelvic fascia which may be regarded as a direct continuation of the endothoracic and endoabdominal fasciae. The third is formed by the muscles.

The entire fascia on the walls and upon the superior surface of the pelvic floor should really be spoken of as endopelvic and be divided into a parietal and a visceral portion. To restrict the term endopelvic to the fascia covering the viscera is illogical and inconsistent and to apply it merely to that portion of the pelvic fascia which extends from the tendinous arch of the pelvic fascia, that is, from the "white line," downward to the viscera and over them, is as objectionable as to follow some British anatomists and call this portion the rectovesical fascia. Similarly if the term obturator fascia is used at all it should be used in contradistinction to the Basle term superior fascia of the pelvic diaphragm, and should designate only that portion of the parietal pelvic fascia which overlies the obturator internus and fuses with the fascia propria of this muscle in this area. The terms endopelvic, obturator and rectovesical as customarily used merely lead to confusion, and it would seem that such use of them should be abandoned in the interests of clearness. However, there is no agreement even among anatomists as to this. Dixon,[6] for example, says that the pelvic fascia is not a direct continuation of the iliac fascia. The difference of opinion probably arises from the fact that it is not always possible to trace the iliac fascia as a separate layer over the entire pelvic brim, for it usually merges very intimately with the periosteum here as it does elsewhere where no muscles are interposed between it and the underlying bones. Not infrequently, however, it can be separated as a very definite layer, and when this cannot be done there is no more reason for doubting its continuity than there is for doubting the continuity of the endothoracic fascia over the ribs. The pelvic fascia also fuses very intimately with the periosteum in the region of the symphysis and indeed over most of the pelvic brim, but sometimes one can separate the transversalis fascia in the hypogastric region and follow it down past the pubes to the anterior ligaments of the bladder and thence up the latter to near or even beyond its apex. In fact, the only region in which the pelvic fascia is absent is in the median portion of the bodies of the sacral vertebra, where it attaches on each side by interforaminal digitations, as pointed out by Luschka,[10] 1863.

It often is easy to demonstrate the continuity of the pelvic with the endoabdominal fascia, in

the dorsolateral region of the pelvic cavity. This always is the case when the tendon of the psoas minor is broad. If this muscle or its tendon with the overlying fascia is reflected the continuity of the latter with the pelvic fascia is easily demonstrated. Hence I prefer to regard the pelvic fascia really as an extension of the abdominal fascia. This also was the conclusion of Waldeyer,[11] 1899, and to regard it otherwise would leave the pelvic cavity, which is continuous with the abdominal cavity, without a fascial lining comparable to that in the rest of the abdominal or to that in the thoracic cavity. This would be illogical and also incorrect.

Though it varies greatly in strength in its different portions and also in different individuals, the pelvic fascia too can be regarded as an anatomic though not as a functional unit, except in a broad sense. However, it must be remembered that, like the peritoneum, it does not represent a single hammock or sling mechanically except in the sense that it is nearly a continuous layer. Downward pressure upon it as upon the peritoneum of the pelvic floor necessarily is translated into tension exerted in different directions, for it lines a rounded cavity and is reflected against the contained viscera.

This fascial hammock has a somewhat varying intimacy of attachment to the underlying musculature of the pelvic and urogenital diaphragms. Yet there is no special advantage in speaking of various portions of it by different names unless it be remembered that it is a continuous, not a composite layer, anatomically. Holl[12] and Smith[5] do not regard the pelvic fascia as continuous with that over the pyriformi, but the material with which I am familiar does not support such a view. The pelvic fascia usually is very thin over the coccygei and the posterior borders of the latter are thickened by fusion with the strong sacrospinous ligaments which increases the difference in level between the coccygei and the pyriformi. The latter also are covered by a very thin fascia of their own and this fuses with the pelvic fascia, thus giving rise to confusion. Not infrequently the pelvic fascia arches over the pyriformi, thus giving rise to the arcus suprapyriformis of Waldeyer.[11]

The pelvic fascia, which I see no reason to regard other than as a direct continuation of the transversalis and iliac portions of the endoabdominal fascia, firmly fuses with the periosteum over much of the pelvic brim and also elsewhere where nothing but periosteum is interposed between it and bone. It may be very thin or be reinforced in its obturator portion by the aponeurosis of the levator ani which, although morphologically separate, is anatomically inseparable from it. It is attached loosely to the true or fascia propria, of the obturator internus, but is thickened locally to form the pubovesical ligaments and the tendinous arch or white line of the pelvic fascia. The tendinous arch of the levator ani which begins higher up dorsally and near to the obturator foramen and joins the former on the way to the ischial spine as shown in figure 3, often is absent even when a strong pelvic fascia

Fig. 3—Photograph of the left half of a dissected adult male pelvis showing the union of the upper and lower (white line) tendinous arches on their way to attachment at the ischial spine: (1) Tendinous arch of the pelvic fascia. (2) Tendinous arch of the levator ani. (3) Obturator foramen. (4) Symphysis pubis. (5) Rectum. (6) Coccyx. The bladder was reflected downward.

is present. It frequently is partial, while the tendinous arch of the pelvic fascia practically always is present, at least in its anterior extent where it forms the pubovesical or puboprostatic ligaments.

THE "WHITE LINE"

I prefer to abandon the expression "white line" because it leads to confusion. The term is used very frequently to designate either tendinous arch. This probably is due to the fact that the fibers of the levator ani very frequently, or even more commonly, arise near the lower tendinous arch or white line instead of higher up on the lateral wall of the pelvis, near the tendinous arch of the levator ani. Much confusion exists, especially in clinical literature, regarding the white line, and the term is an unfortunate one. It really is a later and mistaken addition, for in the eighth edition of Quain's anatomy, Sharpey, Thomson and Schaefer,[13] 1876, in describing the pelvic fascia merely speak of "white bands or anterior true ligaments of the bladder." But in the next edition dedicated to Sharpey, Thomson, Schaefer and Thane,[14] 1882, speak of the "arcus tendineus or so-called white line." The tendinous arch here referred to very evidently is that of Luschka,[10] 1863. The latter spoke of this arcus tendineus of the pelvic fascia as a broad fibrous strand or strip "ein breiter fibröser Streifen." Henle,[15] 1866, also spoke of it as an inwoven tendinous connective tissue strand—"einen eingewebten sehnigen Bindegewebstreifen." The word *Streifen* as here used could be translated correctly as *band*, but not as *line*. Both Luschka and Henle used the word *arcus tendineus*, Luschka[10] in 1863 and Henle[15] in 1866, and their illustrations accompanying the descriptions leave no doubt as to what they described or meant.

Usually the pelvic fascia is intimately united to the levator ani and coccygei and becomes very thin as it continues over the pyriformi. Whenever the coccygei are represented largely by aponeurosis this fascia fuses especially intimately

with the latter and then it may be difficult to identify as a separate layer in this region. It always seemed to me that it should be regarded as extending up the pelvic viscera and as furnishing an almost complete investment for them and the pelvis. It passes between the vagina and bladder and behind the rectum and the nerves and vessels, as well as around the last group of structures, unless we wish to regard their sheaths as composed of subserous tissue independent of fascia.

Although both anatomists and gynecologists of international standing have stated that the pelvic fascia is not an important factor in pelvic support I cannot adopt this opinion. Against this view Liepman[9] urged the fact that it cannot be palpated from the vagina and that neither rapid distension nor rapid restitution of the pelvic floor could occur if the fascia were a resisting structure and functionally important. These objections do not seem entirely pertinent to me because all living tissues such as the pelvic fascia are soft and yielding. Moreover, the well-known rigidity of the pelvic floor in elderly nulipara must, to be sure, be referable very largely to a reduction in distensibility and elasticity of the pelvic fascia with advancing age. It certainly cannot be due to increased rigidity of the musculature. Hence if, as commonly held, such an increased rigidity really exists it seems that it must be referable to the fascia. The same thing holds for the greater ease of labor in multipara, except as due to a relaxed introitus or cervix. This too must be due to relaxations of the pelvic fascia after distension in previous labors. It probably is not due to changes in the uninjured musculature even if a certain amount of atrophy of it could be assumed to follow every labor.

THE VOLUNTARY MUSCULATURE OF THE PELVIC DIAPHRAGM

The musculature of the pelvic diaphragm, which constitutes the third sling, cannot be regarded as an anatomic unit. This musculature can be resolved into three successive and closely related slings each of which is composed of a pair of bilaterally placed muscles. From the symphysis posteriorly these slings are formed by the pubo-, ilio- and ischiococcygeal muscles. All three slings lie in different oblique planes with the direction of the fibers changing from a sagittal to an almost transverse direction, as the ischial spine is approached from the region of the symphysis pubis. All take their origin from the pelvic wall, enclose the vagina and rectum, and insert at the midline, into the perineal and coccygeal raphae and into the coccyx and sacrum.

In the female the medial borders of the first and best developed sling, that formed by the pubococcygei, embrace the urethra, vagina, and the rectum. Since the medial borders of these muscles extend in a parallel direction it is evident that the interval between them can easily be increased when any of the structures which normally prevent their separation are injured. This pair usually forms by far the thickest portion of the pelvic diaphragm.

Although the next or more posterior sling, that of the iliococcygei, has more transversely directed fibers arising from the lateral walls of the pelvis and inserting similarly as the previous sling, their efficacy in pelvic support also depends especially upon the integrity of their attachments in a midline. They usually are very thin, however.

The third sling formed by the ischiococcygei differs from the previous two in that its fibers extend almost in a transverse plane, that they have bony attachments at both extremities and that portions of their musculature frequently are replaced by tendinous strands.

Since the paired, bilateral muscles composing these three slings vary greatly in their development, not only the strength, but also the continuity of this portion of the pelvic floor varies correspondingly. The ilio- and ischiococcygei are especially variable and may be represented by aponeuroses throughout a considerable portion of their extent. Hiatuses may occur not only between these successive muscular slings of the pelvic diaphragm, but also in the aponeuroses of the iliococcygei. Not rarely a crescentic defect in this aponeurosis exists on the lateral wall of the pelvis. Through it a hernia may easily enter the ischiorectal fossa at its apex. The hernial sac in such a case would, of course, be composed of peritoneum and pelvic fascia.

It seems not improbable to me that the yielding of the pelvic floor under strain may be a factor in the production of these hiatuses and also in the production of anomalous arcus tendinei. As already stated the obturator portion of the parietal pelvic fascia not infrequently is extremely thin and if the levator ani has a lower origin from the tendinous arch of the pelvic fascia, undue tension upon this portion could easily cause a separation between the superficial fascia of the pelvic diaphragm and the obturator portion of the parietal pelvic fascia, thus producing the hiatus which Luschka[10] thought was always present. This hiatus has in clinical literature been referred to as the hiatus of Schwalbe, but I have been unable to ascertain the justification for this. It is purely potential, to be sure, and herniation could not occur through it unless tension on the aponeurosis separated its crescentic border from the obturator internus, thus permitting pelvic pressure to form a peritoneal pouch and force it down into the ischiorectal fossa.

Since the pubo- and iliococcygei insert into a median tendinous raphe as well as into the coccyx and sacrum, injury to this raphe must very seriously affect their ability to sustain downward pressure. Hence the support of the pelvic organs would then devolve almost wholly upon the superior fascial layer and ligaments, and upon the peritoneum, including the extraperitoneal (subserous) connective tissue.

121 Waverley Street.

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EXTRA-ARTICULAR FUSION OF THE TUBERCULOUS HIP JOINT*

By JOHN C. WILSON, M. D.
Los Angeles

DISCUSSION *by L. C. Abbott, M. D., St. Louis, Missouri; Fraser L. Macpherson, M. D., San Diego; Harold H. Hitchcock, M. D., Oakland.*

TUBERCULOSIS of the hip joint in children has never responded heretofore to surgical intervention, and conservative management has not yielded encouraging results. The followers of Rollier may disagree with such an assertion, but the fact remains that cases of recovery with motion are not often seen. A certain percentage of the hips treated with traction, sunshine, and ideal surroundings become ankylosed in from three to five years; but the majority only obtain a fibrous ankylosis which allows periods of recurring disability and resultant invalidism.

HOW JOINT TUBERCULOSIS HEALS

The structural changes occurring in joint tuberculosis during the process of healing have been the subject of much discussion, but it will be assumed that true healing takes place only after complete fixation of the joint by osseous fusion. It is possible that the reported cures with motion were in reality nontuberculous joints. The marvelous results reported by Rollier are well known, but since tissue examinations or biologic tests have not always been made in these reported cases of cure with motion the results are of questionable value. A positive diagnosis of joint tuberculosis cannot be made from a study of x-ray plates in the early stages of the disease. Aspiration of a suspicious joint will often yield fluid for animal inoculation or, if this is unsuccessful, excision of tissue for histologic examination may be made with safety. An infected animal presenting characteristic changes in the tissue after inoculation furnishes evidence upon which a diagnosis of tuberculous joint disease may be made.

Case 1, Figure 1—Tuberculosis of hip joint in child of three and one-half years of age. Note the lack of definition about the hip joint.

Case 2, Figure 1—Tuberculosis of the left hip, of one year's duration.

After conservative treatment extending over a period of three to ten years in childhood, quiescence may take place, only to be followed by a lighting up of the disease in early adult life from slight trauma. Remission of symptoms must not be confused with a cure.

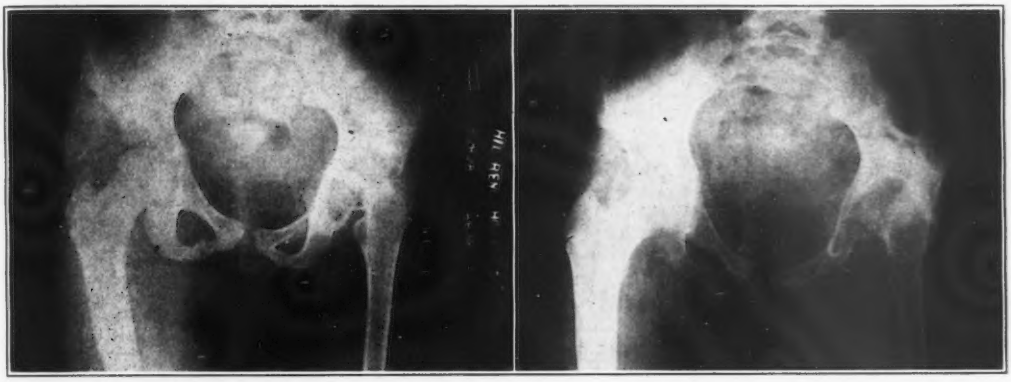
Study of anatomic material in the Warren Museum will convince one that the untreated case, although healed with deformity, at times exhibits a consolidation of the femoral head, neck, and possibly of the trochanter with the ilium.

For many years efforts have been made to produce fusion of the hip joint surgically in both children and adults. This has been done for the most part by an erasion of the articular cartilages of the ilium and femur. A fusion rarely follows, and the patient is subjected to the danger of dissemination of infection. In a child the added

* Read before the General Surgery Section, California Medical Association, at its Fifty-Sixth Annual Session, April 25-28, 1927.

Case 1, Figure 2
Four months after extra-articular fusion. The graft may be seen in position.

Case 1, Figure 3
Six months after extra-articular fusion. Marked increase in the density of the graft may be seen. Clinically the hip is solid and the child walks without pain.



Case 2, Figure 2
Tuberculosis of the left hip after four years of conservative treatment. Note extensive involvement of head of femur and ilium.

Case 2, Figure 3
Six months following extra-articular fusion. The symptoms have entirely disappeared.

danger of interference with the epiphysis is always present.

ANKYLOSING OPERATION OF HIBBS

The idea of treating tuberculosis of the hip by an ankylosing operation which did not involve the joint proper originated with Hibbs. He has devised a successful fusion, and has reported a number of cases at the last meeting of the American Orthopedic Association at Atlanta, which gave definite roentgenologic evidence of fusion. His method consists in a denudation of the neck of the femur with implantation of a section of the great trochanter into the ilium. The approach has been subperiosteal, so that a reposition of the soft tissues allows the periosteum to come in contact with refreshened bone and a solid osseous mass is formed.

ILIO-FEMERO-PLASTY

A splendid fusion may also be obtained by what we have chosen to call ilio-femero-plasty. Through the Smith-Peterson approach, which consists of an incision along the iliac crest and a subperiosteal reflection of the gluteus medius and minimus outward, the capsule of the hip joint is exposed. The capsule is incised parallel with the neck of the femur and freed from its attachment to the superior margin of the acetabulum. The great trochanter is then exposed subperiosteally and split away from the shaft with a broad, flat osteotome. With a thin osteotome a fan-shaped flap is then cut from the lateral surface of the ilium. The greatest width of the flap is at the iliac crest, and by introducing the osteotome under the outer cortex, it may readily be passed downward to just above the margin of the acetabulum. In this way a large plate of bone may be bent downward and slipped into the fissure in the femur. The periosteum of the ilium is then sutured and the ground is laid for a firm fusion by the formation of a bony block which corresponds roughly in shape to the projected line of the femur, the ilium, and the femoral neck. The rapidity with which consolidation in this area takes place is rather surprising, and the ossification of the diseased area is even more startling.

After Care—In the beginning it was our custom to put these hips up in about 10 degrees of abduction in the line of the body. Doctor Hibbs has put all his cases up in 15 degrees of abduction and 30 degrees of flexion. In our later cases this position has been adopted.

A plaster shell should be prepared for the child prior to operation (Hibbs) even though an anesthetic is necessary to obtain the desired position. This shell is thoroughly dried and is applied while

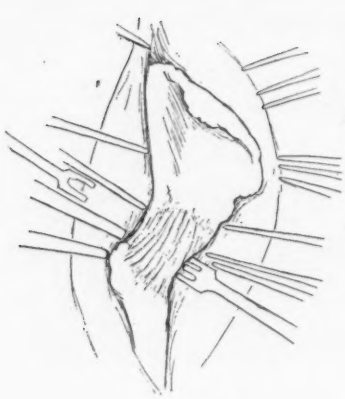


Figure 1
Showing relationship between ilium, trochanter, and capsule of hip joint.

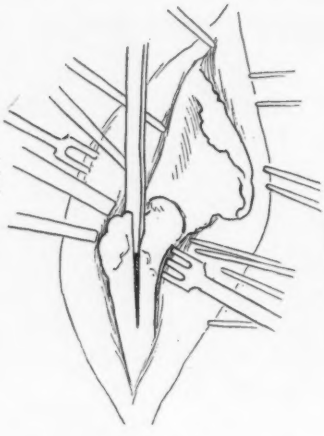


Figure 2
Showing trochanter and shaft of femur being split.

Figure 3
Method of cutting osteoplastic flap from external table of ilium.

warm. Shock, due to operation, and reduction of body temperature from a wet cast is eliminated. As a rule these subjects are not the best surgical risks, but are able to withstand an operative procedure that does not extend over a period of more than forty minutes. The first cast is worn for twelve weeks. If clinical fusion has taken place at the end of this time a short plaster spica is applied and the child is allowed to bear weight. Protection of the hip is carried out until clinical and roentgenologic fusion have been obtained.

Joint tuberculosis is a constitutional disease in every sense of the word, and heliotherapy, rest, and good food are in large measure responsible for success with these cases.

This type of fusion has been used in a number of adult cases. Consolidation is not so rapid, but in the end the results are eminently satisfactory. The presence of abscesses or sinuses is no barrier to this operation. The incision should avoid sinus openings and tracts. After closure the operative wound is sealed with collodion, and the sinuses are left in *status quo,* so that they may be dressed through the windows in the plaster. We have had no postoperative deaths, or cases of postoperative infection.

This technique of joint fusion is applicable to any case in which joint fusion is desired, as in osteoarthritis, and congenital dislocation of the hip, or ununited fractures of the neck of the femur.

1136 West Sixth Street.

DISCUSSION

L. C. Abbott, M. D. (Shriners' Hospital, St. Louis, Missouri)—Doctor Wilson has called our attention to the great difficulty of making a diagnosis of tuberculosis of the hip joint from the history, clinical examination, and roentgenograms. In a considerable number of the cases we can probably arrive at an accurate diagnosis from this data, but there is a very increasing group of patients which are doubtful and can be correctly diagnosed only by animal inoculation or by removal of tissue for pathologic study.

In our cases at the Shriners' Hospital for Crippled Children we have been surprised to find how often we were wrong in the diagnosis of joint disease. This has led us to more frequent exploration with removal of tissue for examination. In some of the cases where the symptoms and clinical findings were typical for tuberculosis we have found a pyogenic infection. It is well, therefore, where there is any question to check up our clinical findings with laboratory examination.

As to conservative treatment of a tuberculous hip joint, our experience has been similar to that noted by Doctor Wilson. While a tuberculous hip may become quiescent through rest, fixation, fresh air and sunlight therapy, it is seldom that one sees a case with definite bony fusion. In my experience a quiescent, tuberculous hip shows a few degrees of motion or the ankylosis is of the fibrous type. Cases of tuberculosis with bony fusion are usually seen where there has been secondary infection. I am in entire accord with Doctor Wilson, therefore, in his belief that operation should be more frequently advised.

I think it is now generally recognized that the extra-articular method of fusion is the one to be adopted for reasons which Doctor Wilson has already stated. Doctor Wilson's method is an ingenious one, and I have had occasion to use it since he described it to me himself. His operation is less difficult than the trochanteric arthrodesis described by Hibbs and the results are very much the same.

I think it is important to emphasize here that too much importance cannot be attached to the pre- and postoperative care of these patients. While we are coming to believe that we cannot depend entirely on fresh air and sunlight for a cure of a tuberculous joint, yet we do know of its great value in building up the resistance of the patient to his infection. We are also coming to realize more and more, therefore, the importance of giving a thorough preliminary course of complete rest, immobilization, and sunlight therapy. Furthermore, following operation, this valuable method in promoting general improvement of the patient and therefore enabling him to fight off his disease is of the very greatest importance.

The results of the operation shown in the photographs are excellent, and I feel that Doctor Wilson is to be most highly commended for developing this method of extra-articular fusion of the joint.

❀

Fraser L. Macpherson, M. D. (First National Bank Building, San Diego)—Doctor Wilson's emphasis on the importance of making a correct diagnosis and then early fusion of our cases of tuberculosis of the hip joint seems to me to be the most rational treatment.

Only by animal inoculation or by removal of tissue for pathological examination can diagnosis be made correctly.

Doctor Wilson should be highly complimented in giving us an easier and better method for extra-

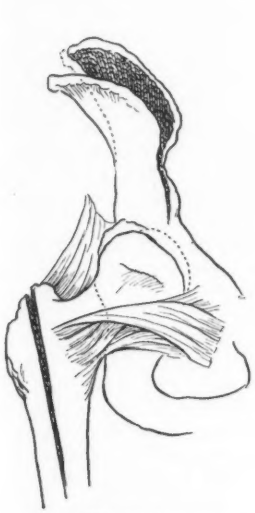


Figure 4
Plastic flap of ilium ready to be turned down. Method of reflection of capsule demonstrated.

Figure 5
Osteoplastic flap in femoral cleft.

articular hip fusion. By early fusion we are saving our patients years in getting well and also insuring against relapse.

I had the pleasure of seeing Doctor Wilson's patients recently at the American Orthopedic Association meeting, and the results are excellent.

❋

HAROLD H. HITCHCOCK, M. D. (1904 Franklin Street, Oakland)—I wish to thank Doctor Wilson for this method of extra-articular fusion of the hip which he has worked out. To me it is much more simple to do than the procedure of Doctor Hibbs. The more simple the procedure of fusing tuberculous joints becomes the more often it will be done, for fusion carries the only real assurance that these joints will stay healed.

The extra-articular method is certainly by all odds the best that has been produced, and again I wish to thank Doctor Wilson for having simplified that operation in the hip.

I would like to ask Doctor Wilson if he has much difficulty checking the bleeding from the ilium after having cut his graft and turned it down.

❋

DOCTOR WILSON (closing)—An extra-articular fusion would of course not be indicated unless a diagnosis of tuberculosis of the hip joint is unquestionable. Many of our cases have been subjected to animal inoculation of tissue from a suspected joint. Periarticular tissue removed at the time of operation has shown positive miscroscopic and biologic evidence of tuberculosis in our cases.

In answer to Doctor Hitchcock's question concerning hemorrhage from the ilium I would say that there is no bleeding from either the flap or the denuded surface of the ilium which cannot be readily controlled with pressure.

New School of Speech-Reading in the West—Alhambra, California, has recently been added to the list of cities having classes of speech-reading in the evening public schools. Miss Marian J. Anderson, who has classes also at Monrovia and Inglewood, is in charge.—*Volta Review.*

CHOLECYSTOGRAPHY*

By R. G. VAN NUYS, M. D.
Oakland

DISCUSSION *by C. G. Reynolds, M.D., Folsom; A. C. Siefert, M.D., Oakland; Fletcher B. Taylor, M.D., Oakland.*

IN presenting this subject before a group of radiologists I shall be able to omit preliminary remarks, and shall refer to the literature only as it has direct bearing on the points I wish to emphasize.

ORAL ADMINISTRATION

We began to use cholecystography through oral administration of the Graham dye in June, 1925. This was given in various ways, viz.: pills, salol-coated capsules, a small capsule of dye placed in the larger capsule containing sodium bicarbonate, and finally in a specially prepared keratin-coated capsule. On reviewing the records of the first hundred cases examined by the oral method we find that about 50 per cent had symptoms of nausea, headache, and diarrhea. We soon realized that the tetraiodophenolphthalein when given by mouth is a gastro-intestinal irritant. Often there were undissolved pills or capsules in the colon, and when the hepatic flexure was high in hypersthenic individuals the dye shadows in the colon obscured the gall-bladder shadow. In the normal cases it was a great pleasure to visualize distinctly gall bladders on which before, we had to spend much time on exposure and much more time scrutinizing numbers of films from every angle. Blaine tersely says, "The percentage of correct diagnoses was formerly in direct proportion to the skill of the roentgenologist as a guesser."

INTRAVENOUS METHOD

There were certain of these oral cases where we found faint concentration which we determined to check by intravenous administration. We recall that the administration of salvarsan was once regarded as a hospital procedure, but that now this kind of intravenous medication is generally given in offices. We felt that if the method was to have general use it must be so modified that it could be used routinely in office practice, as many patients will not go to the hospital for such a procedure. We equipped our offices with adequate apparatus, with rest rooms, and hypodermics for combating the expected reactions. We soon found that no or very slight reactions were encountered and that many of the cases which were doubtful after oral administration of the Graham dye were much more definite and satisfactory of interpretation after intravenous injection. In over a hundred of these intravenous administrations in our offices, I have had only one untoward reaction of any consequence. This patient had previously had an unpleasant experience with capsules. She said to me as I gave the injection, "Why did you not give it this way before? It is much nicer." Just after I had withdrawn the needle the pulse quickened and she

* Read before the Radiology Section of the California Medical Association at the Fifty-Sixth Annual Session, April 25-28, 1927.

became nauseated and vomited. The pulse, however, quickly returned to normal and the hypodermic was not necessary. She changed her mind; but this patient is the only one who has tried both and prefers the oral method. With this patient I was using 3 grams of the dye in 50 cc. of distilled water. After this experience I have been using 2.5 to 3 grams of the tetraiodophenolphthalein dissolved in 120 cc. of freshly doubly distilled water sterilized. The gravity method with physiological saline solution into the vein before and after the dye is used and occupies about twenty minutes for the injection of the dye proper. An evening meal containing some fat and protein, such as the meal suggested by Stewart: thick soup, creamed chicken, soft-boiled eggs, baked potatoes, bread and butter, and a glass of milk is recommended. The patient is given proper instructions and told to take a saline soda enema before retiring so that a thorough cleansing of the colon can be hoped for. Rigid fasting is insisted upon after the evening meal and until the patient reports at the office about nine the next morning. He is allowed to rest lying down for at least one-half hour after injection, and is then at liberty to go home and rest for four and one-half to five hours, when he returns for examination. If a satisfactory shadow of good concentration is obtained at this time, further concentrating time is not given, and he is asked to obtain a meal rich in fat. Two hours after he returns for further roentgen exposures. Tolysin, as suggested by Spurling and Hartman, was tried a dozen times with no marked difference in concentration noted. A few times we have given the dye before leaving the office at 6 p. m. and have let the patient fast until the morning hour. In other cases we have given the dye in the evening after dinner. With the latter methods the peak of concentration is reached, but since the method first outlined is satisfactory, there seems no reason to upset routine office hours. Practically all of our patients come for a complete gastro-intestinal study, and we feel that our work is incomplete if the gastro-intestinal examination does not immediately follow. This gives us an opportunity to observe for forty-eight hours the complete disappearance of the dye and to obtain indispensable gastro-intestinal evidence. We have tried in many cases, without success, to wash out the dye excreted from the liver by high enemata.

INTERPRETATION

Interpretation is often not difficult—the functions being either what we now consider normal or frankly pathological. By the latter we mean no, or faint, concentration after intravenous; calculi outlined; diverticulae; adhesions, etc. With McVicar, I feel that data should be collected with respect to two important facts:

1. Whether a diseased gall bladder may sometimes fill with opaque bile.

2. Whether the gall bladder which fails to fill is always so seriously diseased as to warrant its surgical removal.

He regards the most important limitation to its clinical use the fact that in obstructive jaundice the opaque dye is not excreted.

Regarding the first question, I have been interested in those gall bladders which show fairly good concentration and contract very well but which appear rather flabby and often have a large cystic duct and which are found to retain the dye twenty-four, forty-eight, or even seventy-two hours after injection. I have films illustrating such a case which would seem to be pathological in spite of showing fair function. The reappearance of the gall-bladder shadow may be due either to delayed excretion or to reabsorption of the dye from the intestine. Where there is a normal concentrating time I feel that the reappearance of the shadow is due to reabsorption. Persistence of the shadow, however, to forty-eight hours and longer is probably pathological. I have come to feel that with our method, visualization of a gall bladder at twenty-four hours is the rule rather than the exception. I have not kept a record on all our intravenous cases, but in twenty-five recent cases which had fairly normal function I find over 80 per cent had a good gall-bladder shadow at twenty-four hours; about 50 per cent had a shadow still at thirty hours, and only a few are recorded as having a forty-eight hour retention. Two or three had a seventy-two hour retention. These observations will have to be checked up on many normals before their entire significance is appreciated. We have all seen fair function in gall bladders containing stones.

In regard to his second question, there are many who unhesitatingly affirm that the gall bladder which does not show normal concentration will not return to normal. Sherwood Moore in a recent article in the *Medical Journal and Record* says that we have "no reason to believe that pathological indications change to normal." He backs this observation by examination of excised gall bladders which he finds infected and feels that they could never return to normal. These observations bear much weight because they are based on a large number of cases examined by cholecystography, and also after operation. I feel that where there is no, or a faint, shadow on first examination, these cases should be checked, especially if the oral method is used. We have checked a few and found normal function after doubtful findings with the oral examination. We made one interesting observation on a female patient who had indefinite dyspeptic symptoms. Her gall bladder did not fill by what we regarded as a satisfactory oral administration. She faithfully carried out a medical régime for one year and the test was repeated again, using the oral method. She was feeling much improved in every way, and this time the cholecystograms showed normal function. I related this case to Sherwood Moore. He thought it possibly compatible with a diseased organ which recovered its function. Without the intravenous check following the first examination no conclusion can be drawn.

Regarding jaundice, which McVicar states is the most serious limitation to its clinical use, many writers have given jaundice as a contraindication. It is not a contraindication because of

obstruction. Copher found the toxicity increased only 25 per cent after ligating the common duct in dogs. The reason described by Graham, Moore and others, is that when the common duct is obstructed there is distention and increased tension and dilution of the bile with mucus. This increased tension does not allow the bile to enter the gall bladder. Sherwood Moore states that there is no need of the test in frank cases of cholecystic or biliary disease. Sydney Lang states that in jaundice the gall bladder never outlines with the dye regardless of the cause of the jaundice. As an exception to this last statement we had a case of an old lady with deep jaundice to whom we gave the dye orally. The gall bladder was outlined and numerous small, negative shadows were seen. The cystic duct could also be seen and was long and tortuous. At operation, the gall bladder as well as the common duct was found to contain stones. That the test is not necessary when there is frank cholecystitis, I shall cite the case of a man who had some jaundice plainly seen in his skin and sclera. The clinician strongly suspected biliary disease. Intravenous dye revealed normal function, and his jaundice was probably hemolytic in origin. According to McNee, jaundice may be caused by excessive hemolysis, toxic or infection action of the liver epithelium, the administration of certain drugs or obstruction of the bile passages. The dye then is often an aid in differentiating different types of jaundice.

As Graham has said this test is in its infancy, and as progress has been made with the barium meal, so it will be with this method. I think we should be on the alert to add any data which will increase its diagnostic accuracy. As it was necessary to examine a large number of healthy, young adults to fix a standard for the "position of the stomach, liver, and colon," so I feel that a series of normals should be examined to fix this standard for normal gall bladder interpretation. To this end I have started a series of gall-bladder examinations in the state prison of California where there are a large number of physically healthy adults of all ages. We have uncovered some very interesting findings in respect to blood pressure following the dye, but much more work will need to be done on this before any report can be made.

While I feel strongly that the intravenous method is generally preferable, I also feel that in some cases the oral method may be preferable. The clinician and the roentgenologist together can decide whether there are contraindications to the use of the intravenous. The final choice must often rest with the roentgenologist. If he finds a nervous, apprehensive patient with small veins, or with myocardial symptoms, it is usually better to try the oral method.

SUMMARY AND CONCLUSIONS

1. The Graham method of cholecystography has added greatly to our diagnostic accuracy, but the test is still in its infancy and further data will aid in clearing up some important questions.

2. The intravenous method of administration, if carefully performed, is more dependable than the oral and is a safe office procedure.

3. The choice of method should in the last analysis rest with the thoughtful radiologist, whose duty it is to make this delicate test an indispensable adjunct to the clinician for the accurate diagnosis of gall-bladder disease.

1624 Franklin Street.

DISCUSSION

C. G. Reynolds, M. D. (State Prison, Folsom)—Doctor Van Nuys has covered the ground very thoroughly in discussing the merits of oral and intravenous methods of administering dye.

During the past eighteen months Dr. O. S. Cook of Sacramento and myself have been working up the relative merits between oral and intravenous administration, also the methods of oral administration. We have at present 150 patients that have had their complete series, both oral and intravenous, and seventy of these have come to operation.

I shall not include in my discussion those who have not come to operation.

We have found that there are fewer reactions with the plain gelatine capsule given with soda than when the keratin-coated capsule is used. We have had 32 per cent reactions in the oral administration, whereas with the intravenous administration we have had a little less than 2 per cent reactions.

After a light supper in the evening 3 grams of dye in capsules was given with soda at 9 o'clock at night. The patient fasted until the pictures were taken at 9 o'clock the next morning. Immediately following the picture a fatty meal was given; and an hour following the meal, another plate was taken to determine the amount of dye remaining in the gall bladder. The same routine was used when the dye was given intravenously, and Doctor Van Nuy's method of administration followed, except that we administered 3 grams of dye in double-distilled water, and did not wash the vein out with normal salt after the administration. We find this is less complicated, and have had only two cases in which there has been any sign of trouble. In these two cases the veins showed a brownish tinge at the site of injection which cleared up in a few weeks and at no time gave symptoms except discoloration. In the seventy cases, when our diagnosis was confirmed at the operating table, intravenous injection was found to be 34.4 per cent more efficient than the oral administration. We have also concluded that the intravenous method, as Doctor Van Nuys has suggested, is a safe office procedure, and less expensive than hospital procedure for the patient. At no time have we found that drugs were necessary to ward off the collapse or discomfort of a patient after intravenous administration.

The two facts that Doctor Van Nuys considers important: (1) "Whether a diseased gall bladder may sometimes fill with opaque bile; (2) whether the gall bladder which fails to fill is always so seriously diseased as to warrant its surgical removal," are very important.

We have had five cases that were completely jaundiced and still gave the shadows, the shadows not disappearing after the meals; two cases of a bile-filled gall bladder that contained stones which did not show on the plain film, the bladder emptying after the fatty meal in both instances; one case in which there were no stones on the plain film, no shadow on the film after oral administration, yet after the intravenous administration we found a well-defined shadow of the bladder at the fundic end of which was a well-outlined stone, confirmed at operation, the dye concentration about the periphery enhancing its borders enough to obtain a picture of it. The problem that must be further worked out which will greatly aid in settling the questions Doctor Van Nuys has raised is the physiology of the human gall bladder. I feel that cholecystography is a diagnostic aid for the radiologist that has not been perfected as yet. The physical examination and clinical findings are the

important factors in diagnosing early cholecystitis, in which cholecystography does not always reveal a diseased gall bladder. I feel sure this will be worked out as soon as the physiology and function of the gall bladder are fully determined.

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A. C. SIEFERT, M. D. (Merritt Hospital, Oakland)—The subject which Doctor Van Nuys has selected is one which never fails to draw an audience, though the number of papers published on cholecystography during the last three years in all civilized tongues is legion. Graham and his associates, like Lindbergh, have given us the realization of a dream which we all have dreamed. Reasonable certainty has taken the place of doubt in the roentgen diagnosis of gall-bladder pathology.

In this paper Doctor Van Nuys has covered the subject very completely, and Doctor Reynolds has so well supplemented his statements, that there is nothing left for me to say except to emphasize still further some of their points.

With me the intravenous method of administration of tetraiodophenolphthalein is the method of election. During the past twelve months I have used it to the exclusion of the oral method, and can base my statements on the experience gained from examination of 175 cases. In fully 33 per cent either no filling of the gall bladder was obtained or concentration was low. These 33 per cent would have yielded only equivocal results had the dye been administered orally.

The intravenous method in my hands has developed to a point where I consider it more safe and agreeable to the patient than the oral method. To be sure I still hospitalize my patients for convenience, but I no longer consider this essential.

Emphasis should be placed on the following details of technique:

1. The solution of the dye must be freshly prepared. It must not stand more than fifteen minutes before injection.

2. A dose of 2½ grams is ample. I have found that the doses ordinarily recommended in the literature are too large, and a reaction, be it only a mild one, cannot be avoided.

3. The solution must be dilute. I use 2½ grams of the dye dissolved in 100 cc. of normal saline solution. Greater concentration than this is not wise.

4. The dye must be administered slowly. The gravity method insures this better than injection by syringe. At least ten minutes should be allowed for injection, preferably more.

5. Pituitrin, surgical, 1 cc., administered hypodermically about one-half hour before injection of the dye, I have found to be efficient in preventing a fall in blood pressure to which the majority of the reaction symptoms are due. A contraindication to the use of pituitrin is a history of recent gall-stone colic. The drug does cause the gall bladder to contract and tend to empty itself as I have proven to my satisfaction by injecting it while cholecystography was in progress. Accordingly it will tend to force small calculi, if present, into the mouth of the cystic duct by causing gall-bladder contraction.

In the roentgenological examination proper I have found beside radiography fluoroscopy to be of value. If the gall bladder is visualized one can get considerable information by palpation concerning its mobility, elasticity, and sensitiveness.

As to interpretation of cholecystograms I, too, believe that the future will bring forth increasing accuracy in the early diagnosis of gall-bladder pathology. The basis, however, must be reliable routine of examination. The collection of a series of known normal cases on a large scale such as Doctor Van Nuys proposes to get will be of immense value.

I would like to record the following observations which I have made on my material. I am using the method of Newell for estimating the concentration of the dye in the gall bladder. With an injection of 2½ grams of tetraiodophenolphthalein intravenously the concentration reaches its maximum at fifteen to eighteen hours. With surprising frequency, I find that I estimate it at about 3 per cent in gall bladders against which no accusation of disease may be brought. In a few cases I have kept the gall bladder filled with dye containing bile for seventy-two hours by giving food absolutely free from fats. I have noticed no further concentration of the dye in such cases. These findings would lead me to say that 2½ grams is an ample dose. No matter what the weight of the patient be the gall bladder will concentrate so much and no more, at least under ordinary conditions.

That the diseased gall bladder may and frequently does retain a considerable power of concentration, I think we all have experienced. That the converse is true, namely, that a gall bladder showing low concentrating ability is always diseased is not quite so certain. I have been reporting such cases as "presumptively pathological" pending further bioptic information.

Complete absence of filling, on the other hand, has in my experience always been more than adequately explained by findings at operation.

*

FLETCHER B. TAYLOR, M. D. (1904 Franklin Street, Oakland)—The use of tetraiodophenolphthalein in outlining the gall bladder constitutes a definite help in the differential diagnosis of abdominal lesions. To regard it as more than a help is to invite inaccuracy and faulty clinical judgment. The negative, presumptive or positive findings from the method under consideration must serve as aids in diagnosis and not as pathognomonic or decisive items in determining a diagnosis and the subsequent therapy. If the patient is given the opportunity he will usually trace the disorders of function in himself by answering the questions of a carefully taken history. To put one's trust in mechanodiagnosis is as sterile a procedure as the chiropractor's wholesale mechanotherapy.

Unfortunately the patient has not the advantage of "local sign" in relating abdominal symptoms. He knows to the half inch where an injury has occurred in his somatic being because of the association of sight with sensation, and because of the completeness of his external sensorium. Some individuals seem to possess almost as efficient an internal reception as they have externally, but as a rule we need every bit of evidence obtainable to supplant the more usual lack of this power. The roentgen ray, laboratory findings and diagnostic surgical procedures here take their proper place, and clear visualization of the gall bladder is a welcome addition to the first of these.

It is wrong to suppose that normal gall bladders have a standard behavior or that pathological gall bladders will declare themselves without error just because we have a new way of looking at them. We must receive this with other additions to diagnostic procedure with judicial enthusiasm, interpreting the findings in the light of clinical observation in the individual patient.

A word might be added in regard to the route of administration. Should the dye be given directly into the blood stream, or indirectly by way of the alimentary canal? It is my impression that wherever possible we should avoid putting a foreign body directly into the blood stream. Practically I prefer the oral method for the general reason stated, to be followed by the direct intravenous route where results are indecisive.

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DOCTOR VAN NUYS (closing)—I wish to thank Reynolds, Siefert, and Taylor for their excellent discussions.

We will soon be able to obtain at a reasonable price the isomer of tetraiodophenolphthalein which, according to Sherwood Moore is less toxic, gives a denser shadow and slight persistence of the shadow. It will in addition give a test of liver function which will be used more generally as it becomes known. This substance will, I think, take away the objections to the intravenous method. As Bissell of Minneapolis

suggests, expediency seems to be the sole argument in favor of the oral method.

We have learned much by these methods, but we still have much to learn about cholecystitis. Most of the gall bladders examined by the pathologist will have some pathological change justifying our report of pathological gall bladder. We will be guided in our reports more and more by the effects experienced by the patients several years after the removal of what we term pathological gall bladders.

RHEUMATIC HEART DISEASE—FACTORS IN ITS PROGNOSIS*

By ALFRED HAMLIN WASHBURN, M. D.
San Francisco

DISCUSSION *by Harold K. Faber, M. D., San Francisco; Donald Cass, M. D., Los Angeles; Oscar Reiss, M. D., Los Angeles.*

I HAVE chosen the subject of prognosis in the rheumatic heart disorders of childhood, not because I consider myself an authority, but rather in order to point out the inadequacy of our common knowledge, and to suggest possible ways in which we may gain a greater insight into this perplexing problem.

INTRODUCTORY

In his lectures to the postgraduate students at the London Hospital, Sir James Mackenzie once remarked, "In your practice one question will arise incessantly and insistently implied or demanded of you by every patient, and that question is, 'What is to be the outcome of my complaint?' This question will meet you in most unexpected ways. Your diagnosis may be brilliant and yield you great satisfaction and the applause of your colleagues, but your patient will only be interested in it so far as it throws light upon his own future, and the problems thus presented are infinite."

No one can practice long without a forceful realization of the truth of this statement. Moreover if one has formed the habit of seeing things through the patient's eyes the reasonableness of the demand is obvious. Therefore most of us must find ourselves in agreement with Sir James Mackenzie when he says that "Prognosis is the coping stone which should complete the edifice of a medical education." But when and how is this last coping stone to be added to our educational edifice?

I venture to state that not one of us, while in medical school, ever received any clear-cut instruction on the prognostic significance of each abnormal symptom or sign in the cardiac disorders of childhood. And yet we are constantly confronted with young patients who present unusual irregularities, rate disturbances or murmurs. How can we predict the future wisely unless we do have some definite instruction in regard to the probable significance of such evidences of cardiac disorder?

When the physician is puzzled by unusual symptoms or signs he usually turns to some reference book—Osler, the loose-leaf systems, or a favorite textbook. There much knowledge may be gained concerning the probable diagnosis and perhaps many useful, as well as useless, directions as to treatment. But alas, one looks in vain for definite advice which will enable one to give the patient a reliable prognosis. True it is considered the proper thing to insert a paragraph on this subject. But there are presented only vague generalities or else statistics on mortality or morbidity records in so many hundred cases with a given diagnosis. Such information does not help the physician to determine the probable outcome for his own particular patient nor to estimate the significance of individual subjective and objective phenomena.

We must confess, then, that there is great need for more data on the prognostic significance of all the various evidences of disturbed cardiac function. Furthermore there can be only one reliable method of obtaining the necessary information, and that is by the accurate observation of each patient from the onset of symptoms throughout the rest of the patient's life. There are few such observations available in the whole medical literature of the world and yet they would furnish us with invaluable information concerning prognosis. Nor should we forget that the practitioner is the man upon whom this burden must fall. He alone has the opportunity for the collection of these data, so necessary for the rounding out of our medical education.

The solution of this problem demands not only patient persistence and much time—a lifetime in fact—but also a thorough understanding of the closely allied subjects of diagnosis and treatment. Moreover in the very act of gaining a keener insight into prognosis one obtains information which is of great value in the diagnosis and treatment of the patient. This added knowledge may, in turn, enable the physician to alter the prognosis most favorably. I shall, then, consider briefly a few aspects of these subjects which seem to have a direct bearing on the prognosis.

DIAGNOSIS AS IT CONCERNS PROGNOSIS

It is not my purpose to attempt an evaluation of each symptom and sign of cardiac disturbance as to its prognostic significance. But I wish to call to your attention certain essential facts which we must bear in mind if we are to make any valuable contribution to the subject of "prognosis."

To say that we find positive signs of heart disease—or any other disease—usually means that the disease has advanced to the point of actual damage to the organ involved. Naturally the ideal toward which we strive is the prevention of disease or at least its arrest before any permanent damage has occurred. When I say that early diagnosis is of the utmost importance not only in the treatment but in the resulting prognosis I refer to a diagnosis which has been made before the heart is seriously damaged. For instance, we know that rheumatic arthritis, chorea, and such foci of infection as are represented by chronic tonsillitis or sinusitis, are the most frequent forerunners of carditis. Moreover its tendency to occur in several members of the same family suggests another causative factor. Therefore we must

* Read before the Pediatric Section, California Medical Association, at the Fifty-Sixth Annual Session, April 25-28, 1927.

be constantly on our guard not simply to watch for the earliest evidence of heart involvement, either subjectively or objectively, but also to prevent recurrent infections of the type which experience has taught us are most apt to result in ultimate cardiac damage. The point I should like to stress is that adequate prophylaxis combined with early diagnosis makes the prognosis in general more favorable. Only by such careful observation can we determine the significance of each individual symptom or sign.

Although a discussion of functional heart disorders is not within the scope of this paper, it is well to remember the need for familiarity with the many disturbances in rate, rhythm and sounds which are to be found in the heart of the growing child from birth to puberty. It is only by a clear-cut differentiation between such disorders, whether physiological or due to disturbances outside the heart itself, and those due to early organic heart disease, that one can hope to create a more favorable prognosis for the rheumatic heart. Without such knowledge one may either fail to institute early treatment for a patient with real cardiac involvement or else order a needless and perhaps harmful curtailment of activity for a child who needs plenty of outdoor exercise as part of the cure for his functional heart disorder.

Let us suppose, however, that cardiac damage is already present when the patient is first brought to the physician's office. He must then ask himself two questions: "How can I determine the patient's chances for complete or partial recovery and what measures can be adopted which will improve those chances?" Only the first of these questions, involving problems of diagnosis, concerns us for the moment; the other question we shall consider under the discussion of the relationship of treatment to prognosis.

In order to answer this first question one must consider not only the prognostic significance of variations in rate, rhythm, sounds, size and cardiogram findings or pulse tracings, but also the part played by previous infections, whether obviously rheumatic or not, as well as the importance of evidences of rheumatic infection in other parts of the body. Thus the occurrence of repeated rheumatic infections in the past suggests both that the patient has been unable to get rid of the etiologic agent and also that the probable extent of the damage already done is great—two factors which make the prognosis less favorable. Further, the coexistence of other cases in the same family suggests that the disease is infectious and that there may be a constitutional or familial susceptibility to rheumatic infections. Here again the effect of such findings upon the prognosis is distinctly unfavorable. The importance of careful history taking and of thorough-going examinations becomes obvious as one considers how many factors may enter into the formation of a reliable prognosis.

The clearly defined rheumatic infections are acute rheumatic arthritis, an associated rheumatic carditis, and the less clearly proven chorea. In addition to these there are a great many vague complaints which are often, though probably incorrectly, classed as rheumatic. I refer to fleeting muscle and joint pains without swelling or redness, so-called "growing pains," sore throats, tonsillitis, and sinusitis. It seems probable that the nose, the throat and the accessory sinuses may be the seat of an infection due to the causative agent of rheumatic fever. Whether this is true or not, we know that such foci of infection tend to lower not only the resistance of the local tissues to invading organisms but also the general resistance of the body as a whole. Muscle and joint pains frequently disappear with the removal of such foci. Their relationship to certain infections of the genito-urinary and gastro-intestinal systems has been ably demonstrated at many clinics, notably at St. Louis. Therefore the importance of foci of infection so far as they affect the prognosis of rheumatic heart disease lies not so much in determining their exact relationship—interesting as that may be—but rather in the recognition that the presence of any such focus must make recurrent infection more likely and hence the prognosis more grave. To attempt either proof or disproof of this statement by the quotation of statistics on children with tonsillectomy as compared to those without, is a futile procedure, since the tonsils may or may not represent the seat of the infective focus. Moreover we are apt to forget that the removal of the tonsils after the rheumatic infection has gained an entrance to some other part of the body may be as futile as locking the barn door after the horse is stolen. Removal of foci of infection should be accomplished before the disease has gained a foothold elsewhere in the body.

After estimating the significance of these etiological factors, making a mental note of possible measures of combating them, we must turn our attention to the physical signs. Here the essential point to be determined in any attempt at prognosticating the future, is the extent to which the heart is already damaged. Is there pericardial involvement at present as shown by friction rub or effusion? Has some previous pericarditis left adhesions which seriously handicap the heart in its action? How extensively are the valve cusps damaged? Has a mitral stenosis been produced as shown by presystolic or diastolic murmurs or is there a simple regurgitation? Is more than one valve affected? It is obvious in what way our answers to such questions must alter the prognosis. Passing on to a consideration of the myocardium one must attempt some conclusion as to the evidences for or against damage to the heart muscle. Few rheumatic hearts escape some myocardial involvement, and the degree of harm done in such involvement is not easy to estimate. Clinically, of course, the reaction of the heart itself, whether compensated or decompensated, together with the rate and rhythm may give some information as to the condition of the muscle. The electrocardiograph record may give us valuable aid in recognizing such disorders as damage to the conducting mechanism or to some localized part of the heart muscle. So too the x-ray may be of

use in correcting the errors in percussion of the heart borders or in bringing to light unsuspected abnormalities in the size or shape of the heart.

The importance of evidences of rheumatic infection elsewhere in the body must be carefully weighed. Thus the severity and persistence of joint involvement, chorea, or the characteristic subcutaneous rheumatic nodules, must always enter into the consideration of a carefully formed prognosis. The fibroid nodules, so characteristic of the disease, may serve as a good illustration of the need for careful observation of signs before giving a final estimate of their prognostic value. The English workers were the first to point out their relationship to rheumatic fever. At this time it was stated by certain American workers that these nodules must be more common in England than in America. Soon, however, various workers in this country began to report their appearance in the most severe cases of rheumatic fever. The conclusion was at once drawn that they must be taken as being of serious prognostic significance. Following recent careful and painstaking observations, their occurrence seems to be more frequent than was formerly supposed. They are, then, to be looked on as simply one of the possible manifestations of the disease. And just as repeated evidences of rheumatic infection elsewhere in the body are of serious import so recurrent crops of rheumatic nodules indicate a poor prognosis.

We have already stressed the importance of a thorough history and examination. If we are to give a sound prognosis we must constantly bear in mind the factors which seem to exert the greatest influence on the final outcome. We may say, in the first place, that the prognosis is made graver by the occurrence of rheumatic infections in other members of the family, giving a greater danger of reinfection as well as indicating the possibility of a familial tendency or susceptibility to the disease. Secondly, the presence of any unremoved foci of infection in the patient is to be regarded as a distinct menace to a good prognosis. Thirdly, each recurring attack of rheumatic fever, especially of rheumatic carditis, lessens the patient's chances to a marked degree. And in the fourth place, any signs pointing to cardiac damage increase the gravity of the prognosis in proportion to the degree and type of the damage. Thus evidences of a mitral stenosis are of more serious import than a simple regurgitation. Similarly heart block or other evidences of myocardial damage suggest a permanent impairment of the efficiency of the heart muscle. In short those signs which suggest cardiac decompensation either as an immediate or as a late result must always be associated with a poor prognosis. Repeated decompensation in itself allows one to give only the gloomiest of outlooks.

At times one sees patients so acutely ill with rheumatic carditis that their immediate future seems dubious indeed. But if it is a first attack, and if their past history and general condition give nothing to suggest a poor prognosis, it is often astonishing to see how completely they recover. The late Doctor Holt in the last lectures which he delivered in Peking, discussing the remarkable power of the organism of the growing child to repair severely damaged body tissues, cited several instances of complete recovery from rheumatic endocarditis in which there had seemed to be considerable cardiac damage at the time of the infection. This brings up the question of estimating the prognosis during the period of convalescence. Certainly those patients who show a steady and relatively rapid recovery may usually be given a much more favorable outlook for life, since they show such early evidence not only of less crippling damage to the heart but of good recuperative powers. This also suggests again that by one's therapeutic skill one may favorably affect the prognosis.

PROGNOSIS AS INFLUENCED BY TREATMENT

It may also be said that a thorough understanding of the prognostic significance of every point which is brought to light in the history and physical examination should, in the end, give us the only sound basis for rational therapy. In spite of our acknowledged lack of any adequate grasp of the whole subject I shall attempt to indicate briefly the chief therapeutic measures which seem to have a direct bearing on the prognosis.

First of all I must again stress the importance of the various preventive measures. Separation from other cases of rheumatic infection seems to be clearly indicated, and yet this is rarely done. The removal of every possible focus of infection—not simply the tonsils—is a most valuable and incidentally a much neglected weapon in combating the occurrence of rheumatic infection. And finally the general ordering of the patient's daily routine of life in order to avoid overfatigue, exposure to infections, strains, and chilling exposures, plays its part in the prophylaxis of the disease.

Let us now consider the child acutely ill with rheumatic carditis. We must all agree that absolute bed rest is the essential part of his treatment; but it is important to remember that the patient's future may depend upon the thoroughness with which this simple measure is carried out. Every motion from the act of eating to the mere shifting of the patient's position in bed should be reduced to the minimum expenditure of energy. The patient *must* have rest; and codein or morphin may be a most necessary adjunct to good nursing. The beneficial effects of such therapy may be lost unless it is continued until after the pulse and temperature have returned to their normal level.

Then comes a very critical period in the successful recovery from a rheumatic carditis. How long shall we advise rest in bed and upon what indications shall we depend in estimating the probable prognosis and in determining the speed with which the patient may be allowed to resume his normal activity?

Although I do not feel that this question is by any means solved, yet I do feel that a systematic application of physiotherapy during the stage of convalescence is of the greatest possible value. In 1922 the late Doctor Bronson presented before

this body a most admirable discussion of this subject. There is no question in my mind but that the prognosis may be greatly improved by some regimen which starts with the simplest kind of passive motions in bed and carries the patient along by a careful grading of the exercises until it is safe to allow him to assume the strain of his daily routine of life at home. Such exercises may usually be started about two weeks after the temperature and pulse have returned to normal. The tolerance of the patient to these motions is carefully determined by pulse records before and after each set of exercises, and by blood-pressure readings at least once a week. By this means also much valuable information may be obtained in regard to the prognosis. A rapid increase in the patient's tolerance to a given set of exercises gives evidence of less serious cardiac damage and hence of a more favorable prognosis. There can be little doubt of the danger involved in a period of long bed rest without any such exercises, followed by a sudden resumption of the normal daily activities. Many times it may be a matter of months before it is safe to allow a patient out of bed; but carefully controlled exercises in bed which never go beyond the individual's tolerance will not only shorten the necessary period in bed but will also greatly lessen the strain on the heart when the patient is first allowed up.

These graded exercises are important from quite another point of view, namely, that of keeping up the patient's morale. I am sure we have all seen patients whose failure to make a good fight for life seemed actually to play an essential part in the fatal outcome. The daily exercises give these youngsters some tangible evidence of progress—something to which they can look forward each day with renewed interest in life. Such obvious proof of progress is strikingly absent in the usual regimen of prolonged bed rest. Equally careful attention should be paid to the patient's morale during the whole follow-up period. Physiotherapy classes for some, and boys' and girls' clubs for others, will help materially in combating discouragement. In no other way can we obtain that adequate degree of cooperation, so essential to the preservation of a good prognosis for our cardiac patients.

I have said nothing so far about the question of drugs except to urge the use of opiates to obtain complete rest during an acute carditis. During recent years we have learned to use digitalis less frequently but in larger doses than formerly. Except in the presence of auricular fibrillation—a rare finding in childhood—the results from its use are apt to be disappointing. To be sure congestive heart failure is frequently much benefited by digitalization. A persistent tachycardia may also yield well to digitalis in proper dosage. But in the presence of an acute infection the results are usually so discouraging as to form almost a contraindication to its use. Therefore it may be fairly said that in childhood digitalis only occasionally alters the prognosis to any marked degree, and beneficial results can be obtained only by giving an adequate amount of the drug. Children require 30 to 100 per cent larger doses than the average adult as calculated by the Hatcher-Eggleston formula. Thus for every ten pounds of body weight the average child willl require .13 to .20 grams of the dried leaf or in terms of the tincture about 1.5 to 2.0 cc. per ten pounds of body weight, before actual digitalization can be expected. The total dose may be given over a period of time varying from twenty-four hours to a week, according to the type and severity of the given case. In other words, if digitalis is to affect the prognosis in a favorable way it must be given only to selected cases and in doses large enough to produce actual digitalis effect as shown by a slowing and strengthening of the heart beats. The early toxic symptoms of nausea and vomiting are to be avoided if possible and their development must serve as a warning of overdosage.

Even in these days, when modern scientific medicine denies that there is a specificity in the action of the salicylates, one can hardly pass them by without mention. For the joint pain associated with rheumatic fever yields so satisfactorily to large doses of this drug that their indirect effect on the heart through their quieting of the patient may have a marked influence on the ultimate prognosis. Hence lack of proof as to their specificity cannot justify failure to use them in relieving the pain of rheumatic arthritis. Whether the chance of recurrent rheumatic fever can be lessened by the use of salicylates intermittently throughout the year or during seasons when the patient is subject to attacks, is still an open question which lacks adequate proof on either side. The need for carefully controlled clinical experimentation along such lines is too obvious to need further stressing.

SUMMARY

There are, then, certain essential points at which treatment and prognosis are very closely associated. These may be summarized as follows: (1) The prevention of rheumatic heart disease by separation from possible contacts, by thorough removal of all foci of infection, and by careful treatment of any rheumatic infections as they occur. (2) Early diagnosis of cardiac involvement. (3) Close observation and treatment during an acute carditis. (4) Adequate after care and follow-up with frequent observations on the changing tolerance of each individual patient to graded exercises. I have listed these in such a way as to suggest how the prognosis may be improved by treatment. It must not be overlooked, however, that only by a thorough application of such therapeutic measures as we possess can we gain adequate data upon which to base our prognosis.

I should like to close with a plea for the widespread establishment of convalescent homes where cardiac children may receive proper care and where invaluable observations can be made on large groups of such children during the period when they need rest and quiet. Furthermore the tedious and exacting task of giving graded exercises necessitates rather more knowledge and skill than the average parent possesses. Our hospitals

are usually much too busy with acute cases to carry out any such regimen, and the price demanded by trained physiotherapists places their help quite beyond the reach of either the average family or the average hospital pediatric service. The pressing demand for more efficient care of our cardiac children, and the equally important need for greater knowledge concerning the disease, its cause, and its prognosis cannot be satisfactorily relieved until we have such convalescent homes for that particular portion of our youth who are suffering from heart disease. Nor can I think of any single measure which would accomplish more toward giving these children a brighter prognosis.

University of California Hospital.

DISCUSSION

HAROLD K. FABER, M. D. (Stanford University Hospital, San Francisco)—Doctor Washburn has given a thoughtful and thorough presentation of a subject of great practical importance. The prognosis of rheumatic infections in children is extraordinarily difficult to determine, but it is a thing which parents expect and demand of the physician. Doctor Washburn has shown the points on which the practitioner may base his prophecies. It is well I think in rheumatic cases to keep in the background of one's mind the marked differences between childhood and adult life, particularly the considerable powers possessed by the child to overcome or compensate for degrees of damage which would certainly cripple the adult for life. While it is not well at the onset of rheumatic infection to stress this possibility too heavily it does permit a certain guarded optimism with one's juvenile patients not quite so justifiable with those more advanced in years.

Doctor Washburn's comments on familial infection are of great interest. The whole question of constitutional predisposition is, however, so imperfectly established that it is perhaps better at present not to rely too heavily on its assumptions. *A priori,* contact infection rather than heredity is the more probable explanation of familial incidence, and the better guide to management. It seems to me reasonable to treat rheumatic infection as communicable and to institute suitable precautions against its spread. Proper institutional facilities for patients with actual or potential cardiac disease are essential. The convalescent home in the country, with provisions for full bed rest and trained nursing (as at the Stanford Convalescent Home), certainly offers the best solution. The prognosis, as Doctor Washburn says, depends to a great extent upon adequate rest, and this of course must often be continued for long periods of time. It is not uncommon to see some fever continue for months. The advantages of the country are to some degree intangible, but nevertheless real. The pure air, unobstructed sunshine, freedom from noise and dust plus, perhaps, some unknown factors, bring about a cheerfulness and contentment that, as Doctor Washburn rightly emphasizes, are of the greatest practical value to the patient and make a favorable outcome of his disease more probable.

Doctor Washburn's conservatism in discussing foci of infection is praiseworthy. The character of the relationship between foci and general infection or distant local infection cannot even today and in spite of the enthusiasm of the Rosenow school be regarded as clearly defined. The whole hypothesis will probably undergo radical revision before it is on a firm basis. In the case of rheumatic infection in which the focal infection theory has been held longer than in almost any other disease, conclusive proof is still lacking. It seems most reasonable at the present time to assume that the specific virus may enter the body at any one of several points and may find various lodging places during periods of activity and the intervals between. The best chance of prevention does not lie in the impossible attempt to remove every potential portal of entry before infection nor in the removal of every suspected portal after infection, but to prevent infection first by avoidance of contact, and second, by so improving and maintaining personal and environmental hygiene that the individual's chances of becoming infected are minimized. That the latter is the most effective method is shown by the relative infrequency of rheumatic infection in the economically better classes, in which good hygienic conditions are as a rule possible and actual.

While evidently diseased tonsils should as a rule be removed, purulent sinusitis suitably treated, and so on, it is necessary to recognize that surgical procedures in infected areas are not without danger. Most practitioners of experience have seen such postoperative complications of tonsillectomy as endocarditis, pericarditis, or even general sepsis—complications which the tonsillectomy was designed to avoid. Fortunately these are rare and do not constitute contraindications to the operation where it is manifestly required, but they point to the need of caution and foresight.

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DONALD CASS, M. D. (5300 Hollywood Boulevard, Los Angeles)—I have read Doctor Washburn's article with a great deal of pleasure. He has been unusually clear in covering his subject. My own thought is to add a word about prognosis after repeated attacks, and in later life after the acute damage has occurred. The importance of recurrent or repeated attacks is paramount and is the thing we have all worried over and tried to prevent by removing foci, by removing possible infected contacts, etc. I wish to mention the importance of ***any*** infection in a person who has myocardial damage. The tendency to dilation which occurs in pneumonia can be cited. This same type of intoxication can be said to be present in all general infectious diseases to a greater extent in some than in others. My own experience has been that attacks of gastro-intestinal infections, characterized by slight rise in temperature and diarrhea will in many instances affect the myocardium as strongly as an attack of streptococcus sore throat.

Both Doctor Washburn and Doctor Faber emphasized this in speaking of general hygiene, including removal of septic foci from the body to prevent any loss of resistance that their presence might cause. Exercise and convalescent home treatment is something that many of us are unable to obtain for our patients, but it is the ideal convalescence for this disease. One other means of treatment that I mention, only to condemn, is the use of various dyes intravenously. Many have used mercurochrome and gentian violet in the vein in treating patients during the active courses of rheumatic heart disease, but I have yet to see a patient benefited and I have seen some who apparently did not do so well after having this treatment.

Doctor Faber stated that a guarded optimism is justified. I am frankly optimistic about immediate results; and feel that when past the initial attack, prognosis can be optimistic in direct ratio to the intelligence of the cooperation of the patient and his associates in the promotion of hygiene to prevent recurrent rheumatic fever and other infections after the manner described in Doctor Washburn's paper.

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OSCAR REISS, M. D. (2007 Wilshire Boulevard, Los Angeles)—Doctor Washburn's paper is one quite worthy of thoughtful consideration and offers to the practitioner an excellent basis to guide him in the prognosis of rheumatic heart disease.

I can only emphasize certain of the points that he has already stressed.

1. ***No prognosis should ever be offered until all available diagnostic measures have been used*** not only to assure a proper diagnosis, but also to establish as nearly as possible the extent of cardiac damage. Altogether too frequently have we seen children with trivial heart conditions converted into invalids because

parents have been frightened by improper prognosis. Hasty prognoses often do as much harm as improper treatment.

2. *Importance of Outlining Comprehensive Treatment and Management of This Condition When First Seen*—All of us who are attending county hospitals frequently see our unfortunate little patients taken home so early that they return with a recurrence. This we see repeated until an irremediable amount of damage is done. The best interest of his patients demands that the physician not only be able to properly diagnose ailments and offer therapeutic remedies, but be able also to convince his patients of the dire importance of carrying out implicitly the measures for relief that he suggests.

3. *Prophylaxis*—One cannot help but be deeply impressed by the infrequent incidence of rheumatic infection in private practice among the better-to-do families. This is obvious proof of the importance of hygiene in the prevention of rheumatism.

MECHANICAL DIAGNOSES IN PULMONARY TUBERCULOSIS*

By JOHN R. WILLIAMS, M. D.
San Jose

DISCUSSION *by George Dock, M. D., Pasadena; W. R. P. Clark, M. D., San Francisco; T. H. Toynbee Wight, M. D., Palo Alto.*

"DO not stunt the natural faculties given you by placing too much dependence upon mechanical agencies," is a statement quoted to me as coming from a professor in one of our leading medical colleges. I am a firm believer in that doctrine.

THE SPHYGMOMANOMETER

My father, who was a physician also, discussing the value of the sphygmomanometer, said "Train your fingers to determine the blood pressure and you may find it to help you out of many tight places when mechanical devices are either not available, or fail you when available." He claimed he could, by use of his fingers, make an estimate of blood pressure sufficient for at least most clinical purposes. After checking him with the sphygmomanometer he made a convert of me. I fear too many of us are failing to train the tactile sense as my father did through years of practical experience.

I would not, however, have you think I am opposed to the use of the sphygmomanometer. In diseases of the lungs I believe blood pressure important enough not to trust to my imperfectly trained sense of touch, so I use this mechanical means and record the findings for future reference and comparisons.

I do not make a diagnosis of pulmonary tuberculosis by mechanical means only. I confess I use them, but depend more upon the use of those natural faculties given me by nature. And when machine and natural faculties fail to agree I place more dependence upon the latter. One of the truest statements ever made by John D. Murphy is, "Diagnoses are made with cortical cells rather than with alleged instruments of precision." This opinion I believe I confirmed during five years' work in Government service, where repeated experiences taught me mechanical agencies are too frequently undependable.

THE X-RAY

Let us consider the x-ray. During the greater part of my Government work I had the assistance of a very competent roentgenologist. Yet, in spite of his acknowledged competency, through the use of my natural faculties developed by years of practical experience, the x-ray interpretations were too frequently found and proven to be wrong.

By x-ray I have seen lungs diagnosed as normal that were obviously diseased; and the reverse, diagnosed as diseased which were not. I have seen malignancy diagnosed as tuberculosis; tuberculosis diagnosed as pneumoconiosis; syphilis diagnosed as tuberculosis or pneumoconiosis. I have seen abscess diagnosed as tuberculosis and malignancy as abscess. Recently I saw a case of diaphragmatic hernia diagnosed as tuberculosis with cavitation, and more recently I saw a case of miliary tuberculosis diagnosed as postinfluenzal pneumonitis. A correct diagnosis of this case I made from the history alone which was confirmed by post-mortem findings.

Again I plead against possible misunderstanding, for I am as strong a believer in the use of the x-ray in the diagnosis of lung diseases as any of my hearers, and confess that on more than one occasion it has been of great help in reaching correct conclusions. I am one clinician who seems to recognize there are cases of lung disease which, at the time, give no definite physical signs. This is particularly true of miliary tuberculosis and pneumoconiosis, more especially when associated with an incomplete or otherwise defective history.

But let us not deceive ourselves about the x-ray. We must all admit the plates show nothing but certain shadows of more or less density. They may be flocculent, cottony, linear markings or what not, but the fact remains they are only shadows. I will say without fear of contradiction by any honest authority, similar shadows, similarly placed as to lobe involved, are caused by different diseases. But from the study of such plates there is no roentgenologist that ever has been or ever will be able to state without the possibility of error just what disease is responsible. One needs but to compare x-ray reports with post-mortem findings to be convinced of that fact.

Now let us take the microscope as another example of mechanical diagnoses. Like the x-ray it is too frequently a source of confusion and often of positive error, even though it is so often helpful. We should be more guarded in accepting reports from clinical laboratories which do not tally with the majority of the other means of arriving at a diagnosis.

THE MICROSCOPE

Too many are prone to take the short cut to diagnosis by means of the microscope. By all means use it, but we should not let this mechanical aid stunt our diagnostic ability. Our eyes, hands, ears and cortical cells are fully as dependable.

Let us consider the microscopic examination

* Read before the Medical Luncheon Club, San Jose, June 27, 1927.

of sputum: An acid-fast bacillus reported as present is by too many at once accepted as proof positive that tuberculosis is present. I have been guilty of that mistake in the past, only to become embarrassed later for so doing. The reverse, however, is a more common error. Perhaps we are too inclined to placate the mind of our patient with the statement he is not suffering from that dread disease when the laboratory report is negative.

I believe there are actually fewer cases of tuberculosis than the microscope seems to demonstrate. In other words, with a report of positive sputum in the absence of history, clinical symptoms and physical findings to support a diagnosis of tuberculosis, further observation of such cases will demonstrate the error to be in the laboratory findings, and what was thought to have been the tubercle bacillus, was not.

We should stop to consider that acid-fast saprophytic micro-organisms are found in the mouth, the tonsils, the nose, the throat, and other portions of the respiratory tract that are easily confused with the tubercle bacillus under the microscope, and that tubercle bacilli themselves, both living and dead, have been repeatedly demonstrated in those same localities, with a total absence of clinical tuberculosis in the individual case.

Let us be mindful of the fact there are some people who wish to be labeled as tuberculous, and who submit to us specimens for examination that they have received from some other patient. Here in California, where a beneficent legislature has made tuberculosis one of the conditions compensable under the Workman's Compensation Act, there will probably be a great many more such cases. In Government work with the ex-service men, hundreds of such cases have been uncovered, until it became necessary to pass a regulation that no sputum report would be acceptable unless the sputum was certified, that is, was endorsed as genuine by some officer in authority who had seen it expectorated.

The Ziehl-Nielson method of staining sputum is the one generally used by most clinical laboratories. As you know, acid-fast bacilli take the red stain and retain it in the presence of decolorizing agents. For decolorizing, it is the rule in most laboratories not to use an acid stronger than 25 per cent, with or without alcohol. It is an established fact certain strains of the streptothrix will hold on to the red stain in the presence of 25 per cent acid, and as a result are often mistaken for tubercle bacilli. But if 30 to 35 per cent acid, with or without alcohol, was used the streptothrix will give up the red stain and the tubercle bacillus will hold on to it. This error has frequently occurred, resulting in incorrect reports sent out from clinical laboratories.

I recall a certain clinician who stated to me he had found six cases of lower lobe tuberculosis with no disease in the upper lobes, all in a single year in a series of less than 150 patients, and in each case demonstrated the presence of the tubercle bacillus in the sputum. My opinion is he had an inefficient laboratory technician, and was dealing, at least in part, with streptothrycosis and not tuberculosis.

I wonder how often pulmonary malignancy is erroneously diagnosed by the microscope as tuberculosis. It has been repeatedly demonstrated that malignant tumors harbor an acid-fast saprophyte which reacts toward stains as the tubercle bacillus and resembles it in appearance. When such a malignant tumor ulcerates and discharges through a bronchus we find a sputum containing an acid-fast bacillus which has been mistaken for the tubercle bacillus and so reported. I have wondered if some of the cases reported by Atkinson [1] as tuberculosis complicated by malignancy were not such cases.

The case reported by Heuper [2] very beautifully illustrates that point. He reports a case of proven malignancy in which two different specimens of sputum showed acid-fast bacilli that were reported as being tubercle bacilli. The diagnosis of tuberculosis was made, but on post mortem no tuberculosis was demonstrable.

Again, do not misunderstand me. Tuberculosis and malignancy can occur together. It is well recognized that the walls of old tuberculous cavities are a favorite seat for the development of pulmonary malignancy, just as is the case with scar tissue elsewhere in the body.

Hawes of Boston was probably the first insistently to call our attention to the fact that a positive sputum was not necessary in order to make a diagnosis of pulmonary tuberculosis. In fact he became so insistent too many began to discard the microscope almost entirely. Now, however, Hawes regrets this past insistence. After greater experience he admits that if we will look long enough few cases of clinical tuberculosis will fail to give a positive sputum. As a rule we usually find them by the time we have examined ten specimens, but I have had one case where the tubercle bacillus was not found until the thirty-second specimen had been examined.

Unfortunately, once the presence of the tubercle bacillus has been established, too many clinicians stop there, concluding they have only a case of tuberculosis to deal with. It should not be forgotten other lung diseases follow, or precede, tuberculosis and we may actually have a complication of diseases. As complicating diseases, pneumonia, bronchiectasis, pneumoconiosis and, more rarely, syphilis occur. As Dieulafoy states, "they hatch the latent bacilli," meaning by that, they create a condition by which the tubercle bacillus is liberated from the tissues. In some of these cases there is no clinical tuberculosis present, though conditions favorable for its later development have been brought about.

Rosenberger's startling announcement from Philadelphia, about 1909, that he was demonstrating the tubercle bacillus in the blood of practically all sufferers from pulmonary tuberculosis, and that in many instances he was finding it in the blood of many in whom clinical tuberculosis had not as yet developed, is still fresh in our minds. When his work was checked by others it was found he was using water in which an acid-fast saprophyte was found in large numbers, and it

was that germ he was finding, not the tubercle bacillus.

In 1923, Wight at Hospital No. 24, Palo Alto, California, suddenly began finding positive sputums in cases which before had not given tubercle bacilli and which presented no clinical symptoms nor physical findings to account for the microscopic findings. On investigation he discovered he had been using a fuchsin stain made from tap water in the laboratory, and that this tap water was laden with an acid-fast bacillus resembling the tubercle bacillus. Rechecking his work, using a stain not so contaminated, his positive sputums promptly disappeared.

We should keep in mind an acid-fast bacillus is found in both milk and butter, two foods much used by sufferers from lung disease. It is easy to see how they can get into sputum and be mistaken for tubercle bacilli. Acid-fast saprophytes have been repeatedly demonstrated in the crypts of the tonsils, and from there they can easily get into the sputum and cause incorrect reports.

In any locality where many Oriental people are living we should always be on the lookout for leprosy. The bacillus of leprosy, as you know, is almost indistinguishable from the tubercle bacillus under the microscope. When I was in Government service and stationed at Hospital No. 24, Palo Alto, California, a case of leprosy came into one of my wards. Smears taken from an ulceration in the nose showed large numbers of acid-fast bacilli. It is not difficult to see how easily these bacilli could have gotten into sputum, had there been any, from the nasal secretions. I am confident had I sent in the smears without letting the laboratory know the diagnosis which had been made, and had they been examined by one less discerning than Doctor Wight, a report of "positive for tubercle bacilli" would probably have been returned.

Attention should doubtless be called to the recent work of Holman,[3] Toronto University, by which he has been able to convert non-acid-fast bacilli into acid-fast almost at will, by treating them with certain oily substances before staining. He has also been able to reconvert them to non-acid-fast by washing them with xylol. He cites a case in which he found a seeming acid-fast bacillus in pus from a discharging empyema, which was thought possibly to be tuberculous. Due to the fact that other bacilli similar in shape and size were found in the same specimen which did not take the red stain, but took only the blue stain, he investigated and found that petrolatum had been used in dressing the wound. Treating non-acid-fast bacilli with petrolatum and then staining, he found them easily converted into acid-fast.

I do not find in his report, however, that he has experimented with mineral oil, which is so much used these days for therapeutic purposes. It is barely possible mineral oil may also convert non-acid-fast bacilli into acid-fast, and sputum from persons so treated might be interpreted as coming from tuberculous lungs.

In feces rich in fats, acid-fast bacilli have been frequently demonstrated and mistaken for tubercle bacilli. Acid-fast bacilli are often found in the ear and similarly misinterpreted, possibly being non-acid-fast bacilli converted into acid-fast by the ear wax. Also there are about forty known acid-fast bacilli and it is easy to see how sputum may become contaminated by one or more of them and be misinterpreted as tubercle bacilli.

The clinician is wise who does not accept laboratory reports resulting from mechanical investigation as final until he has checked them against the history, clinical symptoms, and physical findings. In this way he will lessen the actual number of seemingly demonstrated cases of tuberculosis by laboratory methods which give neither history, clinical symptoms nor physical findings of the disease.

Admitting that mechanical means as aids in making a diagnosis are useful to the clinician, and that they should always supplement clinical examinations when practicable, I yet believe they are prone to more errors than the workers with them are willing to admit. I cannot be too insistent that, where mechanical means fail to tally with history, clinical symptoms and physical findings, we are safer to rely on the latter than the former.

I am convinced many physicians are relying on mechanical means as employed in some laboratories, rather than upon those natural faculties given by nature; and by such reliance are failing to develop those natural faculties to that efficiency demanded for excellent clinical work. Never has the art of physical examination and logical deduction suffered so much as since the introduction of the microscope, the x-ray and other alleged instruments of precision. I deny the claim of the laboratory that its work is final, but admit it is helpful, though too often confusing.

246 South First Street.

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DISCUSSION

GEORGE DOCK, M. D. (407 Professional Building, Pasadena)—Doctor Williams' article might be condensed into his own words, viz., "The clinician is wise who does not accept laboratory reports resulting from mechanical investigation as final till he has checked them against the history, clinical symptoms and physical findings." He touches a weak spot in present-day methods in mentioning the large number of cases in which laboratory reports were faulty as the result of inferior training, or poor judgment, or both. He does well to insist on the thorough training of the physician, in all non-laboratory methods. If such a one works with the laboratory man, each one helping the other to advance his knowledge and experience, the better for the patient.

❀

W. R. P. CLARK, M. D. (516 Sutter Street, San Francisco)—I think the paper of Doctor Williams is well timed, for many general practitioners of today are

inclined to look for a short cut to diagnosis of diseases of the chest and depend a little too much on mechanical measures. Too much emphasis cannot be placed on the necessity for a painstaking history, the observation of clinical symptoms, and a thorough physical examination. We should, however, remember that medicine is not an exact science and welcome every mechanical method and laboratory examination available and correlate them with the other findings before reaching a conclusion. Regarding the x-ray, as I have stated in a previous article, I think the roentgenologist should be considered as a consultant of the internist, and the chest condition be discussed with him just as we discuss cases with specialists in other branches of medicine and surgery rather than rely entirely on a stenographic report on the film.

❀

T. H. Toynbee Wight, M. D. (U. S. Veterans' Hospital, Palo Alto)—Doctor Williams' article is timely and full of good advice to the tired busy practitioner of medicine who is so often willing to turn over the responsibility of diagnosis to some laboratory. The colleges are turning out yearly thousands of sightseers who have looked over the field of bacteriology and serology and are searching for positions of trust. The practitioner must be on his guard against such diagnosticians while he must also encourage them in every way possible to gain that judgment without which opinion is of no value.

Doctor Williams labors under a slight misapprehension when he states that my stains were made up with tap water which contained acid-fast bacilli. He refers to a time when I warned the surgeons that acid-fast bacilli were numerous in our drinking water and that one must take this possibility into consideration when notice was given of the finding of two or three acid-fast bacilli in a specimen uncorroborated by clinical findings.

I have demonstrated the possibility of converting diphtheroids into acid-fast bacilli by means of lubricants, and wonder if we may not have to be on the lookout for malingerers when this possibility becomes more generally known. Since many of the coccoidal forms also take the stain under these conditions it will be but rarely that a competent technician need be confused by these appearances.

I think we should be grateful to Doctor Williams for the able manner in which he has presented his case.

❀

Doctor Williams (closing)—In reply to Doctor Dock, one cannot do otherwise than fully concur. I wonder, however, if it might not also be stated that the physician should strive to obtain as thorough training in laboratory work as in the non-laboratory methods, believing it would better enable him to interpret the laboratory findings and properly fit them in with the clinical findings.

In reply to Doctor Clark, we are in hearty accord, and I believe most roentgenologists seek just such a relation with the clinician as pictured.

I regret deeply the seeming misstatement I have made regarding the stains used in the laboratory at Hospital No. 24. I made the statement from memory of five years' duration, not from any written record. It shows again the importance of recording findings and not trusting to memory. Again, perhaps the misunderstanding will serve to lay emphasis on the importance of careful preparation of laboratory reagents even though in this particular instance Doctor Wight's laboratory had not been guilty. Doctor Wight clearly points out another source of possible contamination of sputum through drinking such water as referred to.

I am deeply grateful to the three doctors, whose opinions I value most highly, for discussing this paper.

RADIATION THERAPY IN HYPERTHYROIDISM*

By Albert Soiland, M. D.
William E. Costolow, M. D.
and
Orville N. Meland, M. D.
Los Angeles

Discussion *by Lyell Cary Kinney, M. D., San Diego; J. Marion Read, M. D., San Francisco; William Henry Gilbert, M. D., Los Angeles.*

THYROID disease and its surgical treatment has been ably discussed during the past twenty-five years. Previously the treatment of this condition had always been considered to be medical. Surgical technique has been greatly improved in recent years, and the surgical treatment of thyroid conditions is fairly safe and simple in competent hands. This is especially true in patients having non-toxic thyroid disease. In toxic goiter or hyperthyroidism the mortality rate is still appreciable and end results far from ideal. After reading many papers written upon the surgical treatment of hyperthyroidism, one might obtain the idea that this procedure was practically without danger and about 100 per cent curative. However, a careful review of the literature will reveal that the facts are otherwise. There are many patients who show recurrence of symptoms after operation, and other patients have apparently not received much benefit. Probably the actual surgical cures in selected cases of hyperthyroidism do not exceed 65 to 75 per cent of the patients treated.

The mortality from operations for hyperthyroidism in clinics like those of Crile and the Mayo's, after careful selection and grouping of cases, may be only a fraction of a per cent, but as shown by Crotti and others the mortality by the general surgeons throughout the country is probably nearer 12 to 15 per cent.

In the past ten years the consistent reports of cases made by radiologists throughout the world show that the results of radiation treatment of hyperthyroidism are certainly equal to those obtained by surgery. The logic of the radiation treatment is based upon the fact that in hyperthyroidism there is hypertrophy and hyperplasia of the thyroid cells, with an increased secretory function. Surgery cures by removing the greater part of the hyperactive gland. Radiation cures by destroying and shrinking a large number of the hyperactive cells.

SELECTION OF PATIENTS FOR RADIATION TREATMENT

We believe the most important factor in the success of radiation treatment is the proper selection of patients. All non-toxic goiters (cysts and adenomata) and all toxic adenomata should be removed surgically. If there is some contraindication to surgical removal of toxic adenomata, then radiation may be used—often with very good results. However, the operative risk is so small, and the surgical results so good in toxic adeno-

* Read before the Radiology Section, California Medical Association, at the Fifty-Sixth Annual Session, April 25-28, 1927.

mata, that this type should be referred to the surgeon.

In most substernal goiters surgery should be resorted to if it is possible to remove the mass and the patient's condition permits. Some of the toxic substernal masses are hyperplastic and may disappear after radiation.

We believe radiation should be given first consideration in the selection of treatment of the so-called exophthalmic goiters or cases of hyperthyroidism. The only cases of this group in which surgery is especially indicated are the ones where the gland is large enough to cause pressure symptoms. If radiation is confined only to cases of hyperthyroidism the results will be as good and probably better than surgery, as the treatment is gradual and can be better controlled, and there will not be a mortality rate.

In postoperative cases of hyperthyroidism, radiation is certainly indicated. Numbers of these patients are continually being seen by all radiologists, which is evidence of the fact that it is not always possible to remove just the proper amount of thyroid tissue to cure the toxic symptoms. The fact that with radiation treatment the thymus is also treated, may be one reason why these postoperative cases, which are still toxic, respond so well to radiation.

CONTRAINDICATIONS COMMONLY ADVANCED

In properly selected cases of hyperthyroidism there can be no logical contraindications to radiation treatment. One contraindication that is sometimes advanced is that the radiation treatment is slow and serious visceral changes may take place before beneficial effects from radiation are obtained. In the milder cases this is of no importance because serious visceral changes are slow in appearing and usually there is benefit from radiation before this could occur. In severe cases of hyperthyroidism the patients must be prepared medically anyway before surgery is done, and usually the operative procedure is in several stages, so the elapsed time is as great as it would be from the radiation treatment.

A few years ago some of the surgical textbooks showed horrible examples of x-ray burns on the neck and proclaimed this a serious contraindication to radiation therapy in thyroid disease. This, of course, is an unreasonable argument, because with present methods and technique even a skin reaction need not be produced. Only 25 to 30 per cent of an erythema dose is given at two or three-week intervals, and it is impossible to injure the skin except from carelessness or lack of skill on the part of the radiologist. Others have said that if the thyroid is once radiated an operation later is much more difficult. Many reports from prominent surgeons and pathologists have discredited this. The general agreement is that it is impossible for the surgeon or pathologist to pick out the cases which have had previous radiation. Difficult operation is often met with in cases where there has been previous thyroiditis with fibrosis, so some of the operative difficulties ascribed to radiation probably have no relation to previous radiation. However, if the cases are properly selected for radiation it is very seldom that surgery will ever be needed. At times it has been mentioned that hypothyroidism is liable to be produced. After treating over four hundred cases of hyperthyroidism by radiation (two hundred of these being reported in 1921) and also after raying many cases of malignancy of the glands of the neck, where the thyroid received very large doses of ray, we have never seen a case of myxedema develop. This coincides with the experience of many radiologists throughout the world. If during treatment the metabolism is watched and treatment discontinued while the metabolism is still somewhat increased, no fear of producing myxedema need ever be entertained.

VALUE OF METABOLISM TEST

The metabolism test is invaluable in radiation treatment of hyperthyroidism. Often after treatment is instituted there is a slight increase in the metabolic rate and both the patient and the physician may be discouraged. If, however, the treatment is continued it will be noticed that the patient is beginning to recover from the nervous symptoms, pulse is slower, muscular weakness disappears, and there is a gain in weight. At the end of three or four months the metabolic rate is lower or may even be normal. There is no need for discouragement even if at the end of two or three months there is still an increased metabolic rate, as some patients are six months in returning to normal. Many patients are persuaded to go to the surgeon after a few radiation treatments who could be entirely cured if the treatment were only continued.

TREATMENT

The severe cases of hyperthyroidism should be kept in bed and the patient kept under the observation of a competent internist, using the same routine that the skillful surgeons have used lately to lower the surgical mortality. Iodin in the form of Lugol's solution may be used before and during radiation treatment, in the same manner it is used by the surgeon in preparing the patient for operation. The radiologist should exercise the same painstaking care as the surgeon does in these serious cases, because radiation is a destructive procedure of the hyperactive cells and should be considered to be of the same major importance as is the surgical destruction of the hyperactive thyroid gland. Many of the milder cases may be able to continue light work while taking the radiation treatment, which is often a factor of great economic importance. The large number of patients who are seen with increased metabolic rates and moderate hyperthyroidism, and who may be treated so easily and effectively by radiation, without mortality, leads us to believe this method of treatment should always be given first consideration.

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DISCUSSION

LYELL CARY KINNEY, M. D. (1831 Fourth Street, San Diego)—Doctor Soiland's paper is a comprehensive and impartial statement. However the case is to be handled, the successful treatment requires teamwork. The radiation is given at long intervals and should be considered as only a part of the general care of the patient. At all times the patient should be under

the care of a competent internist who will direct the rest, diet, and medication while the radiological consultant sees the case at proper times to determine his therapy. This cooperation frequently results in success not otherwise obtainable.

The determining factor in therapy is the metabolic rate. This curve should be frequently checked at least before each radiation series. As Doctor Soiland states, a proper metabolic check is complete insurance against over atrophy of the gland. It is a reliable indication of the amount and frequency of the treatment required.

The value of radiation is beyond question in mild cases of hyperthyroidism in young people and in postoperative cases with persistent symptoms. In advanced cases with large fibrous thyroids and with definite visceral changes lobectomy offers a much higher percentage of cures and is more prompt and certain. Here radiation should be reserved for postoperative treatment or poor surgical risks.

The radiation therapy of hyperthyroidism in selected cases is safe and satisfactory in expert hands, but it requires the same clinical judgment and technical exactness as does the surgical management. The average minimum time required for radiation control of hyperthyroidism is not less than three to four months. The patient should understand these facts and the treatment be undertaken seriously and systematically for at least that period of time. Lightly to refer a patient for "a few x-ray exposures" is worse than useless.

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J. Marion Read, M. D. (870 Market Street, San Francisco)—I am very glad to have heard this paper of Soiland, Costolow, and Meland. The radiation therapy of hyperthyroidism has long interested me, but only as an internist anxious to employ any measure which is apt to help the patient, and is also free from danger. It is in this light that I view radiation therapy of hyperthyroidism and upon this basis that I employ it. I am not convinced that thyroidectomy is a rational procedure nor the best therapy in this condition. This does not refer to so-called toxic adenomata because the presence of multiple nodules is evidence of the gland's loss of ability to function normally, and its surgical removal then becomes advisable.

In a considerable series of cases of Graves' disease I have used radiation therapy, and in this journal (January, 1924), I reported fifty cases somewhat in detail. I wish I could be as certain as the authors of this paper that the roentgen ray "cures by destroying and shrinking a large number of the hyperactive cells." While still using radiation, empirically, in the non-surgical treatment of Graves' disease I do not regard it as curative, for it is directed only at the thyroid (and sometimes thymus) and the belief has forced itself upon me that this is not a disease primarily of the thyroid and that measures directed solely at this gland will prove unsatisfactory in most cases. As far as the thyroid participates in the pathologic physiology of Graves' disease iodin will effectually take care of its hyperplasia and vascularity.

I agree with the authors regarding the necessity of patience in the employment of radiation and would even extend the time of treatment to six months, and then not be surprised if the patient did not fully recover for three years. The too early discharge of thyroidectomized patients as "cured" accounts for the number of such patients seen by every internist. The patient with Graves' disease should be under medical supervision for three years regardless of the form of therapy employed.

There is one point upon which I wish to differ from the authors and that is the advisability of radiation therapy in thyroidectomized patients. I believe these patients who continue ill after operation should have other therapy than that directed to the thyroid gland. The only cases of myxedema I have seen after roentgen-ray therapy were in patients who had also had thyroidectomy. One may say it was the thyroidectomy alone which was responsible, since this unfortunate result no longer occurs with modern, well-controlled radiation therapy, but does follow after thyroidectomy in a certain number of cases.

❋

William Henry Gilbert, M. D. (520 West Seventh Street, Los Angeles)—As a general surgeon I have always taken a deep interest in treatment of the various forms of goiter. Unfortunately, like the treatment of cancer, it has been divided into medical, radiological, and surgical. We have reached a stage in the treatment of cancer where anything that will aid in the cure of the disease is adopted. In a measure this is true of the treatment of goiter. I have been particularly impressed by the results acquired with x-ray in the treatment of the exophthalmic type of Graves' disease. So pronounced has been the benefit at times that cases which were inoperable had been rendered safe risks by its use. I have seen the metabolism drop from thirty to sixty points in thirty days and in numerous instances the metabolism drop was accompanied by a decided reduction in the size of the gland. The question of how much to remove at the time of the operation is one that cannot be answered with any degree of accuracy. The surgeon depends upon his experience and judgment, and in the summing up of results the personal equation of the operator has to be taken into consideration. It is no uncommon thing for the metabolism rate to stay considerably over plus twenty after thyroid surgery. This incident I have noticed many times after operation by the most competent surgeons. Having my own metabolimeter and x-ray equipment I have been in a position to test many cases of postoperative hyperthyroidism. It is discouraging to a patient who has undergone a thyroidectomy to have within a year a gradual relapse of the old condition, and when one advises another operation it is difficult to convince him that the first operation was not a failure and that the second procedure is justified and necessary. Personally I am not in so great hurry to reoperate on these patients as formally because I have found that many of them make a complete and satisfactory recovery by the judicious therapeutic use of the x-ray. I am deeply interested in Doctor Soiland's paper and feel that every surgeon who investigates x-ray therapy in the treatment of thyrotoxicosis will find that it is a valuable assistant. This is especially true in the treatment of the exophthalmic type of the disease.

I know something of the work done by Doctor Soiland in Los Angeles and can testify to the truthfulness of his assertions and the excellence of his results. I have repeatedly operated on patients who have been x-rayed and I have no recollection of the difficulties reported as the result of x-ray therapy. I am satisfied that thyroiditis is more often the cause of surgical difficulties than radiation. It is hard for surgeons to keep an open mind when any remedy for toxic goiter other than some favorite surgical procedure is suggested. Personally I am for what is best for the individual patient, and I am satisfied that in the x-ray we have a valuable remedy, both in curing the disease and in preparing patients for operation.

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Doctor Costolow (closing)—I wish to express my appreciation for the constructive discussion of this paper.

I certainly agree with Doctor Read that the so-called disease of hyperthyroidism or exophthalmic goiter may not be a disease primarily of the thyroid gland and that measures directed solely at this gland may prove unsatisfactory. In radiation treatment the thymus is always included, and often in women, where the improvement is slow following radiation of the

thyroid and thymus, the ovaries are radiated. In a number of these patients we have seen a rapid decline in the metabolic rate, and improvement of symptoms follow almost immediately after mild radiation of the ovaries.

Just what the connection is between the chain of glands of internal secretion and the symptoms of hyperthyroidism is not definitely known, but it certainly seems to exist. If surgical destruction or removal of part of the thyroid is a logical procedure in the treatment of hyperthyroidism, certainly the x-ray destruction must be equally as logical, with the additional advantage that this agent may also be used to influence the thymus and possibly other glands of internal secretion.

We cannot agree with Doctor Read that it is inadvisable to radiate thyroidectomized patients. Our experience agrees with what Doctor Gilbert has just said, that many of these cases make a complete and satisfactory recovery if radiation is given. Other therapy may be used advantageously and will not interfere with the radiation treatment. As stated before, we have not seen myxedema following thyroid radiation.

It must be remembered that radiation treatment of hyperthyroidism is much newer than surgical treatment and sufficient time has not elapsed for the accumulation of statistics comparable with those of surgery, although a great deal of this work has been done all over the world in the past ten years. This method is not advised as the only method of treatment in hyperthyroidism, but, as has been shown, if used in properly selected cases it is equally as scientific and efficient as any method available at the present time and without mortality.

PULMONARY ABSCESS—POSTOPERATIVE*

By LEWIS FRANCIS MORRISON, M. D.
San Francisco

DISCUSSION *by Leo Eloesser, M. D., San Francisco; Emile Holman, M. D., San Francisco; Harold Brunn, M. D., San Francisco; William J. Kerr, M. D., San Francisco.*

THIS paper comprises a report on data available at the University of California and San Francisco County hospitals from 1913-1927.

During the fourteen-year period 241 patients with lung abscess have been cared for in the two hospitals; of these 241, there are 40 patients (20, University of California Hospital and 20, San Francisco County Hospital) with a definite history of onset of symptoms following sufficiently near to some operative procedure to lead one to believe that the abscess resulted from the operation or procedures intimately associated with the operation. The remaining 201 may be grouped as: (1) a small number of known etiology such as those of parasitic origin; (2) those with history of onset insufficient to justify the association of the abscesses with some operative procedure; and (3) those whose etiology is unknown except for the fact that they "caught cold," had a "bad cough" and "have been coughing up foul sputum ever since." This paper discusses the forty postoperative lung abscess case histories and offers but brief consideration of the remaining 201 cases.

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INCIDENCE

It is unfortunate that complete data essential for the determination of the incidence of lung abscess as a complication of tonsil operation is difficult to obtain. In the available histories the facts associated with the original onset of the condition are too brief to be of much value for statistical consideration. A typical history often lacks such important details as: place of operation, date of operation, operator, anesthetic employed, immediate postoperative course, etc. The typical history of the patient with lung abscess following tonsillectomy reads somewhat as follows: "Some time ago the patient had a tonsillectomy. The immediate postoperative recovery was uneventful and the patient was discharged to his home on the following morning. Three days later the patient caught a 'cold' and it seemed to settle on his chest. On the following day something broke in his chest and he spit up a relatively large amount of foul-smelling sputum." And so it goes on to describe the subsequent events in the course of the condition. In all instances it was possible to ascertain from the hospital records that the majority of these patients had been operated on elsewhere, had gone through a gradual series of "ups and downs," both physical and financial, and during one of the "down" periods had applied for aid at either the University of California or San Francisco County hospitals.

The history of lung abscess subsequent to operations other than tonsillectomy is, in many respects, more complete. These other operative procedures necessitate hospitalization of the patient for a week or more, during which time the abscess had had time to manifest itself. It is also a fact that the pulmonary status of such postoperative patients is watched more carefully than is that of the tonsillectomized patient.

Twenty of the forty postoperative lung abscess patients here considered followed some operative procedure performed in one or the other of the two hospitals. Histories of the twenty following tonsillectomy show that only four had been operated on in either of the two institutions. This leaves sixteen posttonsillectomy patients to be distributed among the other hospitals of this and the relatively adjacent communities because the records also show that the average lung abscess patient does not wander very far.

The ratio of occurrence of pulmonary abscess following tonsillectomy falls well within that presented by other investigators, in that during the period from 1913-1927 there were approximately 19,000 tonsillectomies performed at the two hospitals with only four lung abscesses, or in other words one in 4800. If the records of the other nearby hospitals were available they would,

undoubtedly, contribute additional data which might materially alter the above ratio of incidence.

TABLE 1

Sex and Age Distribution

Years	1-10	10-20	20-30	30-40	40-50	50-60
S. F. H.	0	4	4	5	4	3
U. C. H. *	1	4	4	3	3	4

* Age of one patient not stated.

Males

S. F. H.	16
U. C. H.	11
Total	27

Females

S. F. H.	4
U. C. H.	9
Total	13

ONSET OF SYMPTOMS

The symptoms of pulmonary lung abscess following operations are sufficiently different to justify a classification into two definite groups. One group is composed mainly of patients with postoperative abscesses other than those following tonsillectomy. In these there is early evidence of pathological changes in the lungs. The temperature takes on a septic swing. The patient is more or less toxic. Notes made in the histories at this time are usually to the effect that the patient has a postoperative pneumonia. The condition progresses rapidly and on the third or fourth postoperative day there is a sharp pain in the chest, following or during a coughing spell and the patient gives the characteristic statement that "something broke in his chest and he coughed up some foul-smelling sputum."

The other group is composed, mainly, of the posttonsillectomy patients. These leave the hospital on the day following operation, and with the exception of a sore throat, feel fairly well. On the second, third or fourth postoperative day they "catch a cold." The cold becomes worse, is augmented by a cough and some time between the fifth and fourteenth days the abscess ruptures.

LOCATION OF ABSCESSES

The right lung is by far the more common site of abscess formation. Twenty-six of the forty patients (65 per cent) showed involvment of only the right lung. Nine (22.5 per cent) showed involvement of only the left lung and the remaining five (12.5 per cent) had multiple abscess formation.

TABLE 2

Distribution of Abscesses

	Right Upper	Right Middle	Right Lower	Left Upper	Left Lower	Multiple
S. F. H.	4	4	6	1	2	3
U. C. H.	3	3	6	3	3	2
Total	7	7	12	4	5	5

Examination of the x-ray plates and other available roentgenographic data showed the majority of the abscesses to be more peripheral than central. Locating them roughly, their position is approximately that of the mid portion of a tertiary bronchus. This fact may have some bearing on the etiology.

MORTALITY

Regardless of the treatment employed there is no marked difference between the mortality rate of the posttonsillectomy lung abscesses and those which followed some other type of operation. According to the last follow-up reports ten (50 per cent) of the former and eight (40 per cent) of the latter are still living.

TREATMENT

Treatment has been, with a single exception, medical, mainly expectant and supportive, for the first three months. The exception was a patient who was bronchoscoped at the end of three weeks and a dark sanguinomucoid plug and the mucopurulent material behind it removed from a right lower secondary bronchus by suction. The patient showed marked improvement following this procedure and made an uneventful and speedy recovery. In general, surgery had been delayed until several months had passed and then only employed as a last resort.

PROGNOSIS

Postoperative lung abscess is a grave complication with the chances of recovery against the patient. Even the opportunity of living a relatively comfortable and useful existence is not often open to him. The outlook during the first six months may not appear so dark, nevertheless during this period the patient's future is settled. Either he responds to medical treatment and fully recovers, or responds sufficiently to warrant surgical interference; or he may run a chronic course and be discharged to his home "improved" or "unimproved." The majority of the patients come under this last heading. The records show that once or twice during each of the subsequent years it is necessary for him to be readmitted to the hospital for a one or two months' stay. During the remissions the patient is not in good physical condition. The amount of sputum may be reduced to a minimum, the odor and the other disagreeable factors may be almost nil, but he has within him a potential danger which cannot be ignored. Slight indiscretions are sufficient to bring about a flare-up. He is far more susceptible to the common upper respiratory infections than is the average individual and they are more serious for him. The average span of life of the patient with lung abscess following operation who survives the first six months is about three years. The patient with lung abscess following tonsillectomy tends to be of this chronic type more often than does the patient who develops a lung abscess following some other surgical procedure. However, the end result is about the same. If the condition persists for more than six months the prognosis is poor.

COMMENT

The first fact which presents itself for scrutiny is that of the total 241 patients admitted to the two

TABLE 3

Data on the Cases at the University of California Hospital, 1913-1927

Case No.	Date	Operation	Days Onset	Anesthetic	Treatment	Disposition
M6340	1913	Hemorrh'd	2-3	Ether	Med.	Improved
OG&M875	1918	Gyn.	1	Ether (400 cc.)	Med.	Improved
WC12262	1916	Gyn.	2	Ether (500 cc.)	Med.	Dead 30 days
WC9845	1915	Gyn.	5	Ether (360 cc.)	Med.	Dead 14 days
WC10664	1915	Gyn.	90	Ether (525 cc.)	Med.	Dead 60 days
S19644	1923	Lap.	2	Ether	M. & S.	Improved
S31160	1925	Laryngect.	6	Local	Med.	Dead 30 days
M12226	1921	Hernia	2	Ether	Med.	Dead 60 days
S9482	1915	Lap.	1	Ether (180 cc.)	Med.	Dead 30 days
M3886	1913	T. and A.	4-5	Chloroform	M. & S.	Cured 1 year
S14143	1917	T. and A.	2	Ether	Med.	Dead 21 days
M6821	1919	T. and A.	14	Ether	Med.	Unimproved
S15157	1920	T. and A.	1	Ether	Med.	Dead 2 years
M16929	1922	T. and A.	9	Ether	Med.	Improved
M8894	1920	T.	5	Ether	Med.	Dead 30 days
M13503	1922	T.	4	Ether	Med.	Dead 14 days
M18931	1922	T.	18	Ether	Med.	Dead 8 months
M18502	1922	T.	9	Ether	M. & S.	Dead 4 years
S31641	1919	T.	5	Ether	M. & S.	Dead 1 year
M30960	1925	T.	7	Ether	Med.	Improved

hospitals during the fourteen-year period from 1913 to 1927 only forty (16.6 per cent) followed some operative procedure sufficiently close as to warrant the statement that the lung abscess was the result of the operation or procedures immediately attendant upon the operation. From the remaining 201 patients ten more with abscesses of known etiology can be subtracted (two from inspired nut shells recovered promptly as soon as the foreign body was removed, two from echinoccus infection and the remaining six followed trauma to or punctured wounds of the chest wall and its contents). Tuberculosis patients with cavitation also are not included. Thus we have left for mention 191 patients with so-called primary lung abscesses of unexplained etiology. The typical history does state that the patient did have a "cold" or pneumonia some time just prior to the onset of the symptoms of abscess formation but does not go into the details as to the exact chain of events immediately preceding the onset of the foul sputum nor does it mention whether this foul sputum came on suddenly or gradually. In these 191 case histories there was no mention of any recent operative procedure.

The second point is the small amount of attention given the subject of postoperative lung abscess in the English, French and German medical literature, but that the condition exists there as well as in this country is well established by the work of Bassin.

THEORIES CONCERNING ETIOLOGY

Discussion of the etiology of postoperative lung abscess is based in the main on the three most plausible theories of (1) aspiration, (2) hematogenous or embolic, (3) lymphogenous routes of

TABLE 4

Data on the Cases at the San Francisco County Hospital, 1913-1927

Case No.	Date	Operation	Days Onset	Anesthetic	Treatment	Disposition
D44391	1925	Orthoped.	8	Gas	Med.	Improved
D36187	1924	Lap.	4	Ether	Med.	Improved
D35876	1924	Hernia	4	Ether	Med.	Dead 14 days
D33036	1924	Lap.	4	Ether	Med.	Improved
D19871	1922	Lap.	5	Ether	Med.	Dead 18 months
D17827	1922	Dental	3	Ether	Med.	Dead 15 days
D25357	1923	Ca. Penis	7	Ether	Med.	Dead 16 days
D13617	1921	Lap.	4	Ether	Med.	Dead 13 days
D18915	1922	Prostate	2	Ether	Med.	Dead 30 days
D17688	1916	Orthoped.	4	Ether	Med.	Improved
D26895	1917	G. U.	2	Ether	M. & S.	Dead 60 days
D40966	1925	T.	14	Ether	*	Cured
D34891	1924	T.	5	Ether	Med.	Improved
D29328	1923	T.	7	Ether	Med.	Unimproved
D29925	1918	T.	5	Ether	M. & S.	Dead 2½ years
D19811	1921	T.	6	Ether	Med.	Dead 2 years
D20513	1922	T.	6	Ether	Med.	Unimproved
D21137	1922	T.	3	Ether	Med.	Improved
D25308	1917	T.	4	Ether	M. & S.	Unimproved
D54401	1926	T.	5	Ether	Med.	Dead 30 days

* Bronchoscoped on the twenty-first postoperative day.

infection, each with its respective proponent and group of adherents. Other theories have been advanced, but for the lack of intrinsic value or supporters or both, appear hardly worthy of further consideration.

Taking up the three theories in the reverse order of their popularity we have for first consideration the lymphogenous. Homans, in reporting on thirteen postoperative lung abscess cases, ten of which followed some type of oral surgery, states that "postoperative lung abscess following oral operations is more often in the upper lobes than other lung involvement, and this tendency suggests that the immediate aspiration from the mouth and throat is less of an etiologic factor than formerly supposed or generally believed." Clendening, in substantiation of this contention in favor of the lymphatic route of infection, cites the work of Grober, who, in the experimental animal, describes a direct lymphatic route of drainage from the tonsil to the apex of the lung. The relatively small number of lung abscesses of this type would lead one to believe that this theory is of minor importance. The fact that the majority of postoperative lung abscesses do not occur in the upper lobes, and when they do occur there are not commonly so situated as to show that the apex was first involved gives precedence to the other two theories.

It is not so easy to dispose of the hematogenous or embolic theory. There is no question that a certain number but not all of the postoperative lung abscesses are of hematogenous origin. The adherents of the hematogenous or embolic theory support their point of view by laying stress on the thrombosis of the blood vessels of the plexus tonsillaris, both before and after operation, and on the marked activity of the parts which tends to dislodge the thrombi. Histological studies of the tonsil show that thrombosis of the veins about the tonsillar crypts is not an uncommon finding, but there is no mention of the finding of thrombi in the larger vessels or in the veins of the plexus tonsillaris. The modern tonsil operation, by which the tonsil and its surrounding intact capsule are removed from the adjacent tissue along the natural plane of cleavage, offers but little opportunity to dislodge thrombi in the smaller veins about the tonsillar crypts into the blood stream.

The contention of those who prefer local anesthesia for tonsillectomies that the adrenalin incorporated in the injecting fluid acts as a prophylactic against postoperative lung abscess formation by contracting the larger blood vessels in the surrounding area and thereby prevents emboli from entering the general circulation is, perhaps, tenable for the short period of the operation and a few hours thereafter. It must be kept in mind that there is a period of secondary relaxation of the muscle coats of the blood vessels and an increased opportunity for possible thrombi therein to be cast into the general circulation. These thrombi may or may not be sterile. In association with this thought one must consider the works of Gottstein, Henle and Mikulicz, who, in their general surgical work, report more pulmonary complications following local than general anesthesia.

Considered solely on the basis of available evidence it would seem that the hematogenous or embolic origin of postoperative lung abscess is far more tenable for the general surgical case than it is for the posttonsillectomy patient with the exception of those few instances where there is multiple abscess formation. In the former the operative area is greater, the blood vessels larger and more numerous and the manipulation of the parts at the time of operation, which is undoubtedly a factor in the dislodgment of pre-existing infected thrombi, is greater than are the same factors in a tonsillectomy.

The aspiration theory presents the most logical explanation of the route of posttonsillectomy lung infection and subsequent abscess formation. Myerson, by bronchoscopy, showed that in 200 tonsillectomies, 155 (77.5 per cent) of the patients had blood in the trachea or bronchi immediately after operation. Since it is possible to demonstrate the presence of aspirated blood it is more than likely that it was preceded by the mucus of the mouth and nasopharynx and the materials expressed from the tonsils during the early stages of the anesthetic and operation. The question naturally arises as to why there are not more postoperative lung abscesses. Myerson's point of view perhaps accounts for the relatively small number in that the mere aspiration of the blood and the preceding infected material does not necessarily result in abscess formation if it is coughed out or otherwise removed from the trachea and bronchial tree within a reasonable period of time. He states that the inhibition of the normal expulsion forces of the lung is the important factor in the production of lung abscess following tonsillectomy.

The failure of Holman and Aschner to reproduce the syndrome in the experimental animal by placing infected material in the trachea or by injuring the mucous membrane of the trachea and bronchi and placing thereon the infected material and the successful results obtained by the former author via the blood stream has been offered as definite evidence in favor of the hematogenous or embolic origin of the condition in the human and likewise as detrimental evidence to the contentions of the adherents of the aspiration theory. On the face of it the data is convincing, but further facts must be considered. The bronchial tree of the dog is more intolerant to foreign bodies and is much more efficient in removing them than is that of the human. The relative pathogenicity of the infecting agent must be taken into consideration when two routes of infection are employed.

PREVENTIVE MEASURES

It is unnecessary to clutter up the literature with further admonitions that the operator should know that the lung fields of the patient on whom he is about to operate are clear; that he is not suffering with an acute upper respiratory infection; that the position of the patient during the

operation should be such that the drainage of infected material, blood and mucous will be away from the larynx; that the advantages of the use of an adequate suction apparatus are many; and that loose teeth, sponges and portions of tonsils and adenoids should not be allowed to gain entrance to the trachea. These points are well discussed in the literature and the conscientious, well-qualified operator always keeps them in mind.

Summary of Data Presented

Total number of lung abscess cases	241
S. F. Hospital	162
U. C. Hospital	79
Total number postoperative lung abscess cases	40
S. F. Hospital	20
U. C. Hospital	20
Total number posttonsillectomy lung abscess cases	20
S. F. Hospital	9
U. C. Hospital	11
Average time of onset of symptoms:	
Posttonsillectomy lung abscess cases	6.5 days
S. F. Hospital	6.3 days
U. C. Hospital	6.6 days
Other postoperative lung abscess cases	3.5 days
S. F. Hospital	4.1 days
U. C. Hospital	2.6 days

CONCLUSIONS

1. Lung abscess may follow a tonsillectomy, but is not more probable than it is as a complication of other operative procedures.

2. With our present knowledge the lung abscess following the aspiration of infected material is the only preventable type.

3. The majority of the lung abscesses following tonsillectomy are of the aspiration type.

4. The hematogenous route of infection is possible, but it is not the common one.

5. The lymphatic route of infection is of minor importance.

490 Post Street.

DISCUSSION

LEO ELOESSER, M. D. (490 Post Street, San Francisco)—Doctor Morrison's paper represents the results of a considerable amount of work, yet I think that his figures and conclusions should not pass without a word of criticism.

The University of California records may give a fairly accurate statistical picture of lung abscess; those of the San Francisco Hospital, which I know intimately, do not. Under the heading "Abscess," the older files grouped all kinds of non-tuberculous suppurations of the lung—perforating empyemas and bronchiectases; these records would need careful screening to be of value. I suspect that the grouping of other pulmonary suppurations under the head of abscess accounts for the manifestly low ratio of 40 postoperative to 201 spontaneous abscesses. Of the abscesses that I see, more than half follow operation, especially tonsillectomy.

Doctor Morrison states that but four of the 19,000 tonsillectomies at these two hospitals were followed by abscess. It would perhaps be more accurate to say that he can find records of but four, for in the San Francisco Hospital the patients are admitted the day before and discharged the day after operation, so that many if not most of the postoperative abscesses escape observation.

I should be inclined to place the onset of symptoms later than Doctor Morrison—usually the abscess does not make itself evident until the second week following operation.

Upon theoretical grounds Doctor Morrison reaches the conclusion that most posttonsillectomy abscesses are due to aspiration; that may be, but this is a question not easily settled upon which many able investigators have cracked their milk teeth. I shall not go into detail, such as the difficulty of explaining why posttonsillectomy abscess usually affects the upper and middle lobes, while proved aspiration abscesses—those occurring after aspiration of dirty sea water, vomitus, etc. —affect the lower ones, but I fail to find evidence in the figures presented in this paper that would justify me in drawing conclusions one way or another.

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EMILE HOLMAN, M. D. (Stanford University School of Medicine, San Francisco)—The prevailing opinion of clinicians in the general and special fields of surgery regarding the etiology of the postoperative pulmonary abscess is perhaps best expressed in the following statement by Hedblom: "From the standpoint of etiology, two facts seem definitely established, first, that the great majority of pulmonary complications following tonsillectomy are due to aspiration infection, and second, that the great majority of them followed operation under general anesthesia." Only a few writers dissent from this point of view, and their case is perhaps best presented by Fisher and Cohen, who say: "When it is remembered that the tonsil in the adult is almost always reeking with bacteria, liberated and perhaps forced into the circulation during an operation on the tonsil, and that the field of operation can never be considered surgically clean, it would appear that infection through the circulation is the most likely and probable way in which a lung abscess occurs." It is apparent from these widely divergent views, that the clinical evidence pertaining to this subject is sufficiently diverse as to make it available for whatever opinion a given writer may wish to emphasize.

From data, which the author admits are distressingly incomplete, and in spite of a lack of observations on the immediate postoperative course following tonsillectomy, the author concludes that "the majority of lung abscesses following tonsillectomy are of the aspiration type." Until larnygologists will observe closely the patients' course following tonsillectomy by daily examinations of the chest and by immediate and repeated roentgenograms whenever a pulmonary complication is manifested so as to ascertain the character of the early changes in the pulmonary fields, there is little justification for this conclusion. Many of the simpler postoperative pulmonary complications following intraabdominal and other operations give physical and roentgenographic evidences of infarction which are unmistakable. Most of these pulmonary changes disappear spontaneously. If patients under observation after tonsillectomy presented a similar picture of infarction, followed by the development of a pulmonary abscess, definite evidence would be available in favor of the embolic theory. And, conversely, the absence of such evidence would be important. More exact observations during the first twelve days following tonsillectomy are imperatively needed to determine the exact course of events preceding the establishment of a frank intrapulmonary abscess. At the present time these patients are always at home during the early postoperative period and any deductions as to what might have occurred during this time are at present of little value.

On the basis of the onset of symptoms, the author classifies pulmonary abscesses into "two definite groups": One "mainly composed of the abscesses other than those following tonsillectomy," and one "composed mainly of the posttonsillectomy abscesses." From descriptions given by this writer and by other authors, the two groups have too many points in common to warrant such a definite division. Furthermore, little evidence is presented to support the statement that "the hematogenous or embolic origin of postoperative lung abscess is far more tenable for

the general surgical case than it is for the posttonsillectomy patient." Perhaps the more exact and definite knowledge which is available concerning the immediate course following the general surgical operation is responsible for the present feeling that the abscesses following these operations are embolic in origin. The experimental evidence available, showing that intrapulmonary abscesses can be readily produced by the introduction of septic emboli into the blood stream, suggests that the postoperative abscesses seen clinically are largely due to infected emboli from the operative field.

I congratulate the author upon placing so large a series of pulmonary abscesses on record for statistical study and interpretation.

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HAROLD BRUNN, M. D. (384 Post Street, San Francisco)—The route of infection in abscesses of the lung is one that is still under very much discussion. It can of course be approached both from the clinical side and the experimental side. It is always very difficult, when looking over a long series of cases of hospital records with which one has had no intimate contact, to form definite judgments as to causations. Unless at the time of taking the history, one is particularly interested in bringing out the facts, we have found that in those cases with which we are conversant, they are frequently woefully lacking in a true statement of the actual state of affairs.

Recent experiments on animals have shown the possibility of creating lung abscesses both by the embolic and by the aspiration route. Both modes of infection are possible, and it is difficult clinically always to state the route of infection. One is inclined to believe, however, that those cases that take a poor anesthetic, with much mucus and coughing, and within twenty-four hours develop symptoms of an abscess, that such cases are aspiratory rather than embolic in origin. In many of the cases which we have had following tonsillectomies, such a history with a rapid onset of symptoms, has led us to believe that aspiration was the cause. In other cases with a late onset—after a week—it is more probable that the embolic theory would best explain the origin of the lung abscess.

The lesson to be learned is—first—that in order to avoid emboli, wounds should be carefully handled with as little retraction as possible, and—secondly—that a quiet anesthetic not too deep so that the cough reflex may come back early, with proper hygiene of the mouth such as using Berwick's dye as a preliminary, would tend to diminish also the aspiration route of lung abscesses.

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WILLIAM J. KERR, M. D. (University of California Medical School, San Francisco)—The author is to be congratulated upon his report of postoperative lung abscess cases. Statistical studies in this direction have been meager because many patients who develop pulmonary complications after tonsillectomy have their symptoms after leaving the hospital. In many instances they probably report to other physicians or go to other hospitals for subsequent treatment.

The incidence of pulmonary complications after other operations which require longer hospitalization during convalescence are more generally recognized and studied. I think that one who has followed the literature of postoperative lung abscess, or other pulmonary complications, is impressed with the divergent opinions as to the cause of the involvement of the lung. There cannot be much doubt, I think, that where lung abscess or other pulmonary complications arise, following operation under local anesthesia in different parts of the body, that the process is more likely to be an embolic one.

However, lung abscess that occurs following tonsillectomy or other operations on the throat or pharynx may have two routes of infection. I think that the work of Lemon and his associates indicates the possibility, in fact the strong probability, that operation on the tonsils will lead to pulmonary infection. The abolition of the cough reflex during anesthesia here plays apparently a very important rôle in the spread of the infection along with the inhalation of infected material.

The statistical studies that have been reported from different parts of the country indicate that in those centers where tonsils are done with the patient in a sitting posture, or without proper local drainage, there is greater incidence of pulmonary complications than where suction is used at the time of operation, or where the patient's head and shoulders are kept in a lower position. One cannot escape the suggestion that has been made by some that infected thrombi in the peritonsillar vessels may break off and be carried to the right heart, thence to the lung, or that infection may spread by way of lymphatics to the pulmonary tissues.

The diagnosis of lung abscess, whether it follows a tonsillectomy or any other operative procedure, or whether it follows some other infection in the lung, has at times been somewhat difficult to make. The x-ray, of course, is of tremendous value in locating the abscess in the deeper tissues. We have not been particularly impressed by the use of the injection of opaque oils, such as lipiodol, because of the difficulty of getting this material in the abscess cavity. Bronchoscopy, with injection of the opaque oil at the same time where the injection could be properly directed, may at times show the limitations of the cavity or cavities.

In the treatment of lung abscess we must keep in mind the fact that a fairly high percentage of the cases will recover without surgical intervention. Rest, diet, inhalations of various type with postural drainage may be all that is necessary to bring about a cure. However, if the cavities do not empty freely, we have found it of value to do a bronchoscopy which may help to open up the channels to the bronchi or, by washing out the cavity, we may assist in the drainage. If the abscess is close to the chest wall and does not heal by the expectant method, surgery should be given consideration. If the lung is not adherent to the chest wall, pneumothorax may be of great advantage in helping to clear up the process. The most difficult problem that we have in the treatment of lung abscess is seen in the patient who has gone on for weeks or months, who is more or less stationary with mild attacks of fever and general symptoms of abscess cavity, showing a fairly thick fibrotic wall. It is in this group of cases that medical treatment will probably be of little value. Artificial pneumothorax may even in these be of some help, but more likely will require surgery, either with drainage or with drainage and cautery.

ARSENICAL OPTICAL NEURITIS—WITH SPECIAL REFERENCE TO SYPHILIS*

CASE REPORTS

By GEORGE NEWTON HOSFORD, M. D.
San Francisco

DISCUSSION *by Lloyd Mills, M. D., Los Angeles; Milton B. Lennon, M. D., San Francisco; Lovell Langstroth, M. D., San Francisco.*

THIS subject was brought to my attention in January, 1926, by the following cases:

A man of 25, whom I had refracted two months before, came to me with a history of blurring of vision, which had begun rather suddenly. I had noted, when I first examined him, an extensive disseminated choroiditis which had involved the right macular region and had missed the left macular region by a fraction of a millimeter. His vision with his correction was 0.2 in the right

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eye, and normal in the left. The disease process was obviously of long standing. The patient was an ignorant workman and would not undergo the extensive examination which is often necessary to determine the cause of such a condition. I felt that the damage had been done, so merely refracted him. When he returned I expected to find an exacerbation of his choroiditis, but instead he had numerous very minute deposits on Descemet's membrane in both eyes, and his optic nerves and the adjacent retina were edematous and slightly hyperemic.

In the two-month interval, between the time when I refracted him and his second visit, he had acquired a chancre. He had gone immediately to a doctor, and the doctor had instituted treatment. When I saw him with his optic neuritis he had received four doses of neosalvarsan and was having daily mercurial inunctions.

Now the question arose, "Was the neuritis due to the syphilis or to the neosalvarsan?"

VIEWPOINTS IN THE LITERATURE

The standard textbooks of ophthalmology state that it is due to the liberation of luetic toxins. The treatment advised is to continue the use of the drug, or even to increase the dose. I discussed the matter with a neurologist and he was of the same opinion and cited cases of his own where he had obtained an increased cell count in the cerebrospinal fluid in comparable cases. This, he interpreted as a reaction to the invasion of the central nervous system by the *Spirochaeta pallida* even at that early stage of the disease.

On the other hand, we know that among the untoward actions of arsenicals is irritation of nervous tissue.

OPTIC NEURITIS FOLLOWING SALVARSAN THERAPY

The ocular manifestations of syphilis have interested all practicing physicians for years, and in going through the literature we find, in the reports of societies, whole sessions devoted to the discussions of ocular lues. These reports begin to have a particular interest for us about the year 1910, when salvarsan was introduced by Ehrlich.

The eye section of the British Medical Association devoted a session of its 1912 meeting to the consideration of lues of the eye and its treatment by salvarsan. There were a number of carefully prepared papers on various phases of the subject, and much earnest discussion.

Doctor Walker of Liverpool had seen several cases of optic neuritis following the administration of salvarsan and admitted frankly that he did not know whether the neuritis was due to the disease or the drug. He cautioned his colleagues not to forget general principles and to remember their experiences with atoxyl. Blindness from atoxyl was not reported until two years after the introduction of the drug and then, within a few months, over two hundred cases were reported in the literature by different workers.

In 1913 the St. Louis Medical Society held a symposium on ocular syphilis. One paper by William F. Hardy reports two cases and refers to a third treated by another oculist. In the first case a very violent bilateral neuroretinitis occurred four weeks after an injection of salvarsan. The neuroretinitis was attributed to the lues and another salvarsan given. The disease progressed from bad to worse, and the patient became blind. A second case received one injection. Three months later the patient developed a neuroretinitis and iridocyclitis. Inunctions and local treatment were ordered and the condition improved under these measures. The result, however, was practical blindness, as it was also in a third case.

He admits, as anyone would, that the salvarsan may have had nothing to do with these unfortunate results, particularly in the second and third cases. Such things may happen under mercury alone. A hitherto well eye may become inflamed, while a similar process is subsiding in the other eye, with the patient thoroughly mercurialized at the time.

On the other hand, in the same meeting we have John Green, quoting a German report, where 63 per cent of seventy-six cases of neuroretinitis had a rapid and satisfactory result. Ehrlich himself, however, warned against the use of salvarsan in any patient who showed signs of optic neuritis, and it was some time before the ophthalmologists ventured to use it in such cases. Green concludes that when such lesions are certainly luetic salvarsan is indicated, although the best results are obtained when the drug is combined with mercury and iodides.

The report of the discussion of the treatment of syphilitic eye lesions by the Ophthalmological Society of the United Kingdom occupies fifty pages of their transactions in the year 1916.

On the question of salvarsan and optic neuritis J. B. Lawford quotes from a monograph by Dor the following evidence: "In records published from 1850 to 1911 he found five cases of severe papillitis and gumma of the optic papilla; between 1911 and 1914 he found ten." Wernicke gives the following facts: "In 1912 a death occurred in Odessa, following the administration of salvarsan. This led to a temporary abandonment of the drug by the medical men of the town. They reverted to mercurial treatment alone. During the twelve months, in 1911 and 1912, while salvarsan was in use, he had referred to him ten cases of acute optic neuritis in syphilitics treated with the drug. In the subsequent twelve months, while the drug was not in use, not a single case came under his observation.

In 1923 we find the pendulum swinging the other way. In this year a paper on the treatment of ocular syphilis was read by E. A. Shumway to the College of Physicians of Philadelphia. In this paper he devotes a paragraph to the conditions we have been considering. He says: "In luetic optic neuritis mercury has always been successfully employed. When salvarsan was introduced many cases of optic neuritis were discovered, and it was assumed that they were due to an arsenical intoxication, which had undoubtedly been the case with previous use of atoxyl. Many

controversies as to the true nature of these so-called neurorecidives were carried on and progress in the treatment of syphilis of the central nervous system was greatly retarded because of the fear of their appearance. Syphilologists found, however, on more careful examination of their cases before treatment that the frequency of such lesions was nearly as great as those reported due to salvarsan, and fortunately it was found that additional large doses of salvarsan, administered after the development of the nerve lesions, had a tendency to cause a disappearance of the symptoms, and nearly all ophthalmologists follow the advice of syphilologists in advocating the use of combined treatment with salvarsan injections and mercury, obtaining in this way as intensive a therapy as possible, in order to avoid the blindness which must result from long-continued inflammation."

As he unfortunately speaks in generalities, and does not give case records and statistics, one is inclined to be skeptical as to the value of this opinion.

A particularly able discussion of the ocular effects of tryparsamid by Cady and Alvis of St. Louis appeared in the *Journal of the American Medical Association* of January 6, 1926. The literature of the subject is reviewed and is inclusive just as in the condition we have discussed. Their own series consisted of 153 patients who were considered normal. That is, they had no recognizable signs of neuritis, atrophy or diminution in visual acuity or perimetric fields. There were also twenty-seven cases considered abnormal because of the presence of one or more of the foregoing signs or symptoms.

Of the 153 normal patients eight, or 5.2 per cent, had sufficient manifestations to warrant their tabulation. Among this eight, three had slight contraction of the fields which disappeared after temporary withdrawal of the drug, and of five with marked constriction two failed to improve. So that 1.3 per cent of normal patients were injured by the use of tryparsamid.

Of the twenty-seven abnormal patients ten, or 37 per cent, became worse. Six of the ten had recognizable atrophy at the start, while four had slightly, or moderately, constricted fields at the start. Four, or 14 per cent, of the twenty-seven were noticeably improved, while thirteen, or 48.2 per cent, remained the same. Three of the patients with optic atrophy progressed to blindness. The patients who suffered permanent injury were treated early in their experience with the drug.

EXPERIMENTAL STUDIES

So much for clinical reports. Now let us turn to the experimental phase of the question:

In 1924 an article by Young and Loevenhart of the University of Wisconsin on "The Relation of the Chemical Constitution of Certain Organic Arsenical Compounds to Their Action on the Visual Tracts" appeared in the *Journal of Pharmacology and Experimental Therapeutics*. It is a masterly investigation into an exceedingly complex subject. They investigated merely the power of these compounds to produce changes in the optic tracts, and not the nature or mechanism by which such changes were produced. Their method was first to determine the minimal lethal dose for rabbits for each compound. They then took a group of animals, from three to twenty-three in number, upon which to try each compound, and injected them intravenously at weekly intervals with a dose that averaged about 25 per cent of the minimal lethal dose. For example, they took twenty rabbits and gave them tryparsamid. The M. L. D. was found to be 1.25 grams per kilo. Twenty-five per cent of this was computed for each rabbit, and given in an ear vein once a week. At the same time the rabbits were examined with the ophthalmoscope. The number of doses given varied considerably, but if lesions were not produced sooner they were given eight to twelve doses. At the end of the experiment the animals were killed by air embolism and the eyes taken for microscopic study. The eyes of six normal rabbits were studied as controls.

The nineteen compounds studied were divided into five groups on the basis of their structure. First they studied representative inorganic arsenicals; next, organic arsenicals without an amino group; and finally, arsenicals with the amino group in the ortho, meta, and para position, with reference to the arsenic.

In four of these classes the arsenic may be either trivalent or pentavalent. At least one trivalent and one or more pentavalent compounds were used in each group. Three arsenical compounds are known to produce visual tract lesions: *viz.*, atoxyl arsacetin, and tryparsamid.

The three have certain characteristics in common: (1) The arsenic is pentavalent. (2) They all have an amino, or substituted amino group, occupying the position para to the arsenic.

All of these substances produced lesions in rabbits, as did also several others of the same general structure. The ophthalmoscopic appearance usually began to change after the third or fourth dose. The optic cup would become filled, the nerve head blurred, and in the more marked cases there were hemorrhages in the retina and the vitreous became cloudy.

Arsphenamin and neoarsphenamin in which the amino group, or substituted amino group, is in the meta position were tried out on only three rabbits each, but the experiments ran for thirteen weeks with the arsphenamin, and nine with the neoarsphenamin. No lesions were produced. There is a footnote on neoarsphenamin stating that the minimal lethal dose varied from 150 to 275 milligrams per kilo, depending on the drug and the company that made the drug. This may be a clue as to why some patients develop optic-tract lesions from neosalvarsan, and why the great majority do not. Of course these experiments do not accurately reproduce the condition that we face in the human subject. The rabbits were not diseased, and the susceptibility of the human optic tract may differ from that of the rabbit to the same arsenical compound. The experimenters quoted were aware of this and, in fact, called

attention to it. The dosage used in the experiments were also greater than would be administered to human beings.

It may be false logic to withhold arsenicals in cases of syphilis showing optic-tract lesions, and time may show that these are the very cases where such therapy is most valuable, but in the present state of our knowledge of the subject it seems wise to proceed with caution in these cases.

In the patient who was under my observation, improvement in the optic neuritis was observed within two weeks after the neoarsphenamin was discontinued. Within six weeks all signs of the inflammation had disappeared. His antiluetic treatment was continued with mercury and bismuth, and I feel that our course in stopping the arsenical was probably correct.

490 Post Street.

DISCUSSION

LLOYD MILLS, M. D. (609 South Grand Avenue, Los Angeles)—Several years ago a physician came to me with a story of a minor incision of a finger occurring during an operation on a syphilitic patient. He gave this wound immediate attention, no local lesion developed, and repeated Wassermanns were negative. In spite of this he developed a definite and increasing syphilophobia. To allay his fears he went to a number of physicians and pleaded for a protective course of salvarsan from each on preventive grounds, stressing his psychic need.

I saw him after about two years of treatment and found a definite hemorrhagic neuroretinitis. The inevitable outcome was explained to him and every attempt made to deter him from further treatment, but he persisted and when last seen was blind from total arsenical atrophy of both optic nerves and central retinal degeneration.

A second case of cured syphilis, with negative Wassermanns for several years, was treated with neoarsphenamin every three months. Each injection was followed, in the eye having a posterior polar cataract, by a definite inflammation of the optic nerve which gradually began to whiten. These treatments were concealed until the man was obliged to disclose his history or go elsewhere. Improvement in the ocular condition followed and has been maintained since discontinuing these needless injections.

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MILTON B. LENNON, M. D. (380 Post Street, San Francisco)—Doctor Hosford's paper calls attention to a question that was first mooted shortly after Ehrlich had introduced salvarsan, a question that has not been fully answered even today.

That an optic neuritis can and does occur in the early stages of syphilis is indisputable—that it is a frequent accompaniment of late syphilis, particularly of the cerebral forms, has long since been recognized. Salvarsan and its various offsprings have increased the incidence of optic neuritis by a small percentage. This may be due either to its direct influence or by its freeing neurotoxins. The Herzheimer reaction is well recognized and is usually the result of using a small, almost tentative dose of salvarsan. A second generous dose will, as a rule, clear up the situation. Since this reaction is usually noted in patients beyond the early days of syphilis, it can be avoided by giving a preliminary course with mercury and iodides, and in generous doses. These invaluable remedies have been pushed too much aside since the introduction of salvarsan, and by many their true and extraordinary values are hardly recognized. They may not attack the spirochaetes with the valor of the salvarsan, but they can break down the products of syphilis whether these be arteritic, meningitic, or gummatous, in a way that salvarsan is in no way calculated to do.

We have little to fear in the way of an optic neuritis from salvarsan as is evidenced by few ill consequences from its use amid its universal employment. Even in ill-advised overdoses sufficient to produce a polyneuritis that lasted for months there were no residual effects to the optic nerve. It is well to ask ourselves, in any given syphilitic patient with optic neuritis, if salvarsan is playing a part. A disturbed kidney function may be the cause. With an upset gastro-intestinal system I have seen an optic neuritis in a syphilitic cleared up by mild saline cathartics; hence we should not blame salvarsan for an optic neuritis until we are sure that nothing in our way of investigation or treatment is not primarily at fault.

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LOVELL LANGSTROTH, M. D. (490 Post Street, San Francisco)—The fundamental problem behind this question is just why a small percentage of patients treated with salvarsan preparations develops optic neuritis. Syphilitic infection may bear no relation to it at all. In fact, since the great proportion of syphilitics escape it seems possible that it is not a question of liberation of syphilitic toxins at all but entirely a reaction between this drug and certain susceptible persons. We have no accurate knowledge of the tissue qualities which make for this susceptibility, but from the frequency with which we find degenerative processes in the cardiovascular, locomotor and nervous systems of supposedly normal persons we may presume that degeneration is half the story. Persons with degenerative changes or with lowered resistance to infection stand strain very badly. In the case of Doctor Hosford's patient the marked choroiditis which antedated the syphilitic infection was perhaps a sign that this particular individual would not tolerate salvarsan.

THE LURE OF MEDICAL HISTORY

AMBROISE PARÉ

By JEAN OLIVER, M. D.
San Francisco

APLUTARCH of the sixteenth century, writing of the great who had preceded him, would have chosen without doubt among his subjects two names that stand out in the history of science, Andre Vesalius and Ambroise Paré. For you remember, Plutarch, after describing the lives of his heroes, groups them in pairs and adds his "comparison," setting forth their similarities and differences and detailing in orderly fashion the first, second, and third "advantage" of one over the other.

In political affairs the opportunities for such estimates are perhaps easily found—kings, emperors, and statesmen present themselves automatically and their lives and deeds are public matters to be weighed and judged. It is otherwise in the history of science. But if ever the method were applicable to the subject of our interest, it is in the case of the two whom we have mentioned. So let us see what it will bring forth.

They were born to the same times—Paré three years the elder. But to what different conditions: Vesalius into a noble family, the aristocracy of medicine and the university—the great grandfather, physician to the Emperor and rector of the University of Louvain; the grandfather, a physician and author of mathematical treatises; the father, personal physician and pharmacist to the Princess—Governess of the Low Countries—

Figure 1—The "Thanacth" Monster

Paré the third of three sons of a country cabinet maker.

The contrast of their early life might be imagined from these conditions. Vesalius, trained in the classical humanities at Louvain, "does" his medicine at Paris and Montpellier, is admitted to the doctorate, and at the age of twenty-three becomes professor of anatomy at the University of Padua. Paré acquires, between intervals of domestic service with a priest, the elements of reading, writing and arithmetic, and, what was to prove in the end a boon to his country, even if an embarrassment to him, no Latin. Inspired by the operation of a traveling lithotomist on his master, the priest, he apprentices himself to a barber and after seven years in the provinces we find him in Paris "bound" to a master surgeon-barber. And so, between cleaning the shop, shaving patrons, and coiffures, he interns at the Hotel Dieu and at last is received into the company of barber-surgeons. Not until late in life, and then only by the influence of his friends among the great, does he receive the doctorate in order that he, the greatest surgeon of his time, may teach publicly. A contemporary describes the ceremony and smiles at the candidate's rendition of the Latin thesis which had been prepared for him in order that the requirements might be met. He read as best he could the words which had no meaning to "uneducated" eyes.

Both men used the armies of the times as a means of education, for here was material for the anatomist or the surgeon. Vesalius took no great pleasure apparently in these experiences, but throughout his life Paré was enjoying his camp bed with "its cover all sown with brilliant stars, more clear than fine gold" as he expresses it, following the wars, describing new methods of treatment, devising new operations, among these his greatest gift to surgery, the ligation of arteries in amputations. And furthermore, what was to be of exceeding importance to a Protestant such as he on the Bartholomew's Eve which was to come, during these campaigns his skill saved the lives of men, among them the Duc de Guise, who would later save his with their political influence. To live to the age of eighty and die in one's bed was an achievement in itself for a Protestant of Paré's time. Doubtless his early hardships and his life with soldiers had taught him the art of living under perilous conditions with equanimity. Vesalius, with no such handicaps, too much the aristocrat to bend before the storm, could only go from controversy to controversy in a life that ended prematurely in tragedy.

In the books of these two men we see their essential differences. "Vesalius" in classical Latin, superb in its illustrations and form, is a treatise to marvel at. "Paré," a readable, rambling collection in the homely, forcible French of the day, is a book to be enjoyed. Here, too, is a contribution of Paré, not to medicine alone, for he should be grouped with Rabelais and Palissy as one who crystallized French prose and liberated it from the yoke of Latinity. No wonder that Ronsard should have graced his works with a sonnet, for here was another fellow artisan at the edifice of a national language which the "Pleiade" was building.

Contrasting with the formal well-planned text of the trained professor of anatomy we have the well-intentioned but somewhat disorganized recordings of a man who has gained his experiences slowly and with difficulty and whose childlike amazement before the wonders of nature in the end runs riot. So we see at the head of the list of chapters the very proper introduction to anatomy, followed by wounds, bandages, and operations. Then there succeeds such a "hodge podge" as gout, syphilis, pest, smallpox, poisons, the physiology of generation, culminating in the "Monsters" where are depicted the "thanacth" which we have illustrated and the "haiit, which lives on air alone." Can we imagine Vesalius concerned with such old-wives' tales!

The illustrations of the two books also differ in selection and treatment. Those of Vesalius with their classical beauty of the Italian Renaissance have never been equaled in the history of medical illustration. In Paré we find simple wood cuts, the majority showing surgical instruments and matters of technique of this practical man or the naive representation of strange animals and mythical monsters which had excited his wonder.

As to style, we must leave that of Vesalius to the appreciation of the Latin scholar, but can hazard a guess that it is as formal and correct as was the man. Paré's we can enjoy—homely, forceful phrases, savory of the talk of the common people of his day. It is easy to feel an intimacy with this kindly humored man who tells how he stopped one day to laugh with a crowd of children at the antics of a monkey who, he says, "monstroit son cul qui estoit tousiours á decouvert, á cause que son habit estoit court, de peur quil ne fust saffrané." Here surely is the touch, not of pity, but of vulgarity, which also makes the whole world kin.

So if you wish to know this man, get his "Apologies and Travels"—his story of his daily life in those troubled times will hold you like a novel.

2398 Sacramento Street.

CLINICAL NOTES, CASE REPORTS AND NEW INSTRUMENTS

DIABETES MELLITUS WITH MYELOGENOUS LEUKEMIA AND MILIARY TUBERCULOSIS*

CASE REPORT

By HYMAN RAPAPORT, M. D.
Los Angeles

TO date there have been reported only three cases of diabetes mellitus with myelogenous leukemia, and only one case of diabetes mellitus with myelogenous leukemia and miliary tuberculosis, occurring simultaneously in the same person.

In 1892 Rebitzer[1] reported the first case of diabetes mellitus with myelogenous leukemia. Fitz,[2] in 1920, and Glaser,[3] in 1927, have each reported a similar case. In 1905 Schwartz[4] reported the first case of diabetes mellitus with myelogenous leukemia and miliary tuberculosis. My case is similar to the one reported by Schwartz.

REPORT OF CASE

J. B., male, age 42, single, and steamfitter by trade, was admitted to the Los Angeles General Hospital, March 7, 1924. Patient number 205-109. Eight months prior to his admission to the hospital he began to lose weight and to have excessive thirst and appetite. At that time a diagnosis of diabetes mellitus was made and he was treated with insulin—40 units daily. During those eight months he frequently complained of pain in the right shoulder and cough. He had lost thirty-five pounds during that time.

The patient gave a history of having had a fractured leg ten years previous to this illness. His habits were good. His family history was of no significance.

A physical examination was made March 8, 1924. It revealed a poorly developed white male who did not appear acutely ill. The eyes reacted normally; the teeth were poor; the tongue was coated; the tonsils were small and diseased. Routine examination of the chest was negative, with the exception of harsh breath sounds. There were no masses in the abdomen. The spleen and liver were not palpable, the enlargement not occurring until about three months after his admission, when the following condition was observed: The liver was four fingers below the costal margin and slightly tender. The spleen reached to the middle line and below the iliac crest. The notch was easily felt. No general adenopathy was found. At this time the diagnosis of myelogenous leukemia was made and substantiated by a number of blood counts.

X-ray of the chest was taken July 22, 1924; showed pulmonary detail rather heavy throughout the chest, especially the hilar region. Nothing distinctive of tuberculosis.

Blood Wassermann, negative.

Date	Condition of Patient
3/20/24	Severe hemorrhage due to extraction of all of patient's teeth. Lost approximately 300 cc. of blood. Fifteen cc. of horse serum injected.
6/21/24	Patient complained of pain in shoulders and knees.
8/7/24	Spleen very much enlarged.
10/30/24	Spleen decreases in size.
11/30/24	Patient feels chilly. Losing strength rapidly. Running high temperature.
12/20/24	Patient died.

Course and Treatment—Patient became sugar-free at various times under insulin treatment; patient received from fifteen to forty-five units and a diet of 2000 to 3000 calories daily. Three months after his admission he developed myelogenous leukemia, for which he was treated with benzol. The patient complained of pain in the shoulders and legs repeatedly, expectorated blood several times, but at no time were tuberculosis bacilli found in the sputum.

One month previous to death the patient began to have night sweats, chills, and fever, his temperature

* From the medical service of the Los Angeles General Hospital, service of Dr. H. P. Hare.

LABORATORY FINDINGS

Date	Blood Count	Blood Chemistry	Urine Analysis
3/7/24		Sugar, 333 Mg. per 100 cc.	Color, clear
		Total non-protein nitrogen, 42 Mg. per 100 cc.	Reaction, acid
			Trace of albumin
		Preformed creatinin, 1.5 Mg. per 100 cc.	Sugar, positive
			Trace of acetone
		Uric acid, 5 Mg. per 100 cc.	No pus cells
			No casts
5/14/24		Sugar, 200 Mg. per 100 cc.	
		Total non-protein nitrogen, 28 Mg. per 100 cc.	
		Preformed creatinin, 1.2 Mg. per 100 cc.	
		Uric acid, 4 Mg. per 100 cc.	
6/24/24	R. B. C., 3,900,000		
	W. B. C., 99,000		
	Myelocytes predominate		
7/22/24	R. B. C., 2,560,000		
	W. B. C., 8500		
	Myelocytes, 27 per cent		
10/17/24	W. B. C., 144,000		
11/19/24	Hb., 60 per cent		
	R. B. C., 3,000,000		
	W. B. C., 20,000		

running as high as 104 degrees. He became weaker and weaker, losing strength very rapidly during the last three weeks of the illness. He died December 20, 1924.

Autopsy Report—Autopsy performed by Dr. Lawrence Parsons. Findings: Body of apparently middle-aged white male, fairly well developed. Rigor moderate. Greenish tinge to skin over abdomen. Sclera clear. Pupils equal and regular, 4 mm. Subcutaneous abdominal and thoracic fat very small in amount. Thoracic and abdominal muscles very pale.

Abdominal cavity: Contains about one liter of clear straw fluid. Appendix apparently unaltered. Small intestine slightly distended; serosa is uniformly smooth and gray. Urinary bladder slightly distended. Spleen is enormously enlarged, extending downward 10 cm. below the left costal margin. Left lower border of liver about 7 cm. below costal margin. Right diaphragm at lower border of fourth rib. Left at fifth rib.

Left pleural cavity. No adhesions, small amount of clear straw fluid.

Right pleural cavity, same as left.

NOTE—General post-mortem changes quite marked, obscuring many of the finer points of gross pathology.

Heart: Moderately enlarged. Epicardium slightly cloudy. Right atrial cavity distended with soft chicken-fat clot. Tricuspid valve apparently unaltered. Myocardium of right ventricle soft and flabby, normal thickness and very pale in appearance. Mitral valve apparently unaltered. Myocardium of left ventricle, average thickness, 12 mm.; is very pale and flabby. Aortic valve leaflets are thin, free, and pliable. Aortic intima is uniformly smooth and light yellow. Coronary artery intima pale gray and smooth. Weight of heart, 480 grams.

Left lung: Is voluminous, weighing 1320 grams. Pleural surfaces are smooth and glistening. Lobes are slightly crepitant with a rather rubbery feel. Bronchial mucosa slightly reddened. Lymph nodes at hilus slightly enlarged and dark pigmented. Cut surface of upper lobe is slightly moist, a grayish pink, finely granular, and is diffusely and closely studded with discrete, pin-head size, grayish, semitranslucent, nodules. The lower lobe presents exactly similar picture.

Right lung: Showed changes almost identical with those of the left lung.

Spleen: Weighs 1590 grams; measures 20 by 15 by 5 centimeters. The margins are all quite rounded. The surface is fairly smooth and of a pale reddish brown color. Capsule shows very little alteration. The organ is slightly softened, but of about the usual consistency of spleen. The cut edge everts slightly. Cut surface shows a great swelling of splenic tissue, overriding all the trabeculae and appears a homogeneous, almost glistening light reddish brown color.

Liver: Is markedly enlarged, weighing 3360 grams. The capsule is thin and translucent. Liver tissue shining through appears a faintly mottled brown and light yellow color. Organ is moderately softened. The cut surface is very pale, slightly yellowish brown, and the lobular markings are indefinite, giving the appearance of a fatty metamorphosis.

Kidneys: Are normal size and shape, symmetrical, considerably softened. Capsule strips easily, leaving a smooth, pale reddish gray surface. The cut surface is very pale, slightly resembling cloudy swelling, but with a pinker color, being slightly grayish pink. No gross changes aside from the softening and the paleness observed.

Urinary bladder: Is slightly distended with turbid straw urine. Walls and mucosa are uniformly thin and show no gross alteration.

Prostate: Is apparently not enlarged.

Anatomical Summary—(1) Marked enlargement of spleen and liver. (2) Marked anemia. (3) Miliary tuberculosis of both lungs.

Probable Cause of Death—Chronic myelogenous leukemia.

Contributory Cause—Acute miliary tuberculosis of lungs.

(Unfortunately, by some error the findings of the pancreas do not appear in the record.)

COMMENT

Each report of the three cases of diabetes mellitus with myelogenous leukemia notes the fact that the diabetes mellitus preceded the myelogenous leukemia. In my case the leukemia did not appear until more than three months after the patient was admitted to the hospital. In Schwartz's case this matter is uncertain. It is also interesting to note that of the five cases of diabetes mellitus with myelogenous leukemia reported, two were complicated by miliary tuberculosis.

1048 Temple Street.

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Home Care of the Sick—The New York *Times* of June 1 discusses the remarks of Dr. W. C. Alvarez of the Mayo Clinic at the American Medical Association on the subjects of home diet and home nursing. It says:

"Doctor Alvarez would seem at first sight to be developing a bad case of fundamentalism when he urges the superior advantages, in a good many cases, of that old-fashioned institution, the home, against the modern scientific sanatorium. For those who can afford a first-rate sanatorium he has no suggestions. For the great many who cannot, he believes that the cure will go much better 'in the home of a devoted relative.' This is badly, sadly mid-Victorian. Are there such things as quiet homes to be found in the jazz age? Is the 'devoted relative' not utterly extinct in an age of self-expression?

"The speaker evidently believes that the species survives. He assumes that there are still mothers and wives who are willing to take trouble in a sick-room. He further assumes that affection is not necessarily incompatible with intelligence, or, at any rate, that affection plus moderate skill will balance the trained ministrations of nurses. As between a good hospital nurse who will wake an insomnia patient at 7 in the morning in order to make ready for the doctor's inspection and a maiden aunt who will let you sleep till nine, Doctor Alvarez prefers the maiden aunt."

Family physicians will say "Amen" to all this.—*New York State J. Med.*

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An open forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects for discussion invited.

DIPHTHERIA

Clifford Sweet, Oakland—We are possessed of the means for completely mastering diphtheria:

1. The causative organism is known.

2. Antitoxin is a specific remedy if given early and in sufficient dosage.

3. Passive immunity can be readily produced by antitoxin.

4. Active immunity of long duration is conferred by toxin-antitoxin.

5. The presence or absence of the immune state can be determined at any time by the Schick or Kellogg test.

In spite of the excellence and completeness of these weapons, diphtheria continues to be the third cause of death in the United States for children under six years of age, and the mortality in recognized cases is still 10 per cent.

Consideration of these facts makes our duty as physicians plain. We must educate parents to call us early in the course of illness. The mortality of diphtheria adequately treated by antitoxin is only two-tenths of 1 per cent during the first day, but rises to 10 per cent if treatment is delayed until the third day. We must urge that all children be given toxin-antitoxin early in childhood. Toxin-antitoxin produces a lasting active immunity in 97 per cent of the children to whom it is given and rarely, if ever, causes even passing discomfort. We must examine each child's throat thoroughly at each and every visit and take cultures when even the slightest evidence of inflammation is present. We must realize that the evidence furnished by cultures is only additional or supplementary and that decision must rest upon the clinical condition entirely. If diphtheria appears to be present we must give a full dose of antitoxin at once, report the case to the health department as suspicious, and then calmly await the report on the culture. An exudate on the tonsils sufficiently dense to form a continuous membrane is usually diphtheric, and if the membrane has spread ever so slightly beyond the border of the tonsil or is upon the posterior pharyngeal wall, one may safely say it is always caused by diphtheria. Likewise, if membrane of any sort is present, accompanied by swollen cervical glands or if the tissues of the throat are edematous (membrane present or not), one cannot safely do otherwise than give antitoxin at once. Then, too, the laryngeal form must never be forgotten with its prevalence in children under two years of age, its progressive loss of voice, "its voiceless cough," and its all too frequent fatal termination unless early and vigorous treatment saves the child.

Antitoxin, beside being given early should be given in a single large dose by the intramuscular, the intraperitoneal or the intravenous route—never subcutaneously, except when the object is to produce passive immunity after exposure and slow absorption is desired. The time of highest concentration of antitoxin in the blood stream after administration is as follows:

Subcutaneous	72 to 96 hours
Intramuscular	24 to 48 hours
Intraperitoneal	12
Intravenous	at once

The time required to absorb half or more of the dose given is:

Subcutaneous	24 hours
Intramuscular	12 hours
Intraperitoneal	6 hours

When time is so important the disadvantage of the subcutaneous method is apparent.

No child with clinical diphtheria should have less than 10,000 units of antitoxin, and if doubts exist as to this amount being adequate doses up to forty or fifty thousand units are indicated. There is but one danger connected with the administration of diphtheria antitoxin and that is, a state of hypersensitiveness to horse serum. While this is a real danger, it must not be exaggerated and can be guarded against by injecting 1/100 cc. of antitoxin intracutaneously or, better still, applying it to a skin scratch according to the method now generally used in asthma and hay fever. If the patient is sensitive an urticarial wheal with pseudopodia will appear within twenty minutes. If this reaction to horse serum does not appear the antitoxin may be given with safety. If the patient is evidently hypersensitive the following schedule must be carried out. Give adrenalin and atropin by hypodermic to aid in controlling reaction.

(1) 1/1000 cc. subcutaneously.
(2) 1/100 cc. subcutaneously after 20 to 30 minutes, with an additional 1/100 cc. at intervals of 20 to 30 minutes until 1/10 cc. has been given intramuscularly.
(3) 1 cc. intramuscularly after 30 to 60 minutes.
(4) 1/100 cc. intravenously after one hour.
(5) 1/10 cc. intravenously after one hour.
(6) 1 cc. intravenously after one hour.
(7) The full indicated dose.

All children should be immunized against diphtheria.

All suspicious cases should be given a single large dose of antitoxin at the earliest possible time.

A. J. Scott, Los Angeles—All children from 6 months to 6 years old should be given the prophylactic toxin-antitoxin. All children from 6 years to 12 years should be tested with the Schick test to determine their susceptibility to diphtheria. This technique would soon eradicate diphtheria.

The earlier treatment is instituted in acute cases, the lower the mortality rate.

Give 20,000 units of fresh serum; that is, serum dated as far in advance of the date of expiration as possible, thus avoiding low potency serums. The actual bulk of 20,000 units is not much more than 10,000 units and the excess units will do no harm, even at 6 months.

For quick results and least soreness, inject the peritoneal cavity. Apply tincture of iodin to the navel and over a three-inch space laterally and below, wiping off the excess with alcohol. Put clean towels wrung out of bichlorid or lysol solution on the upper abdomen and below the pubes. Have assistants hold the child's hands firmly above its head, and the knees down.

Use serum at temperature not higher than body temperature to avoid coagulation. Having seen that the child's bladder is emptied, insert the needle through the skin, then run between the skin and the muscles for half an inch or little more, then thrust directly into the cavity. This will not injure any intestine, as has been proven experimentally. The skin is then wiped free of all iodin and a cotton and collodion dressing applied.

A slight rise of temperature in about two hours and in the older child a complaint of soreness in the abdomen may occur. The temperature may go as high as 104 or more, but for only a few hours. The soreness in the abdomen will disappear in thirty-six to forty-eight hours. Usually there is no interference with bowel action, rarely any vomiting, and the amount of discomfort is slight compared to that following the barbarous method of injecting into the tissues of the back.

If the intraperitoneal route is inadvisable the most satisfactory route is intramuscular at the junction of the upper third with the middle third of the thigh on its external aspect. The site has this advantage; the tissues are all muscle; the patient can lie on back, front and opposite side; the circulation is free, and the serum is rapidly absorbed. It takes about twelve hours to get the system saturated with the serum by this route, while by the intraperitoneal route it is claimed that the full effects of the serum are reached in two hours. The intravenous route has no advantage over the intraperitoneal, and it is not recommended for ordinary use in the home except under extraordinary circumstances.

The dosage used, 20,000 units, rarely has to be repeated. If, however, the case is very toxic, and response does not seem to take place, repeat the dose once and in the same manner.

Twenty thousand units is used for all types of the disease. The laryngeal type has no more systemic reaction than the others. There is only an added mechanical obstruction to relieve which intubation is at times necessary. There should be no need for tracheotomy. The case that is not seen until it needs a tracheotomy is in such a desperate state that it may die later, as many do, of secondary pneumonia. Dr. Chevalier Jackson says this may be by a collapse of the lung from plugging a bronchus with mucus or membrane. Tracheotomy should only be done as a last resort.

Intubation is clean and not difficult if the anatomy of the throat is remembered and a tube large enough to stay in is used. The thread should remain attached so that extubation may be easy. This thread may be fastened with adhesive to the cheek in the case of the infant, or in the older child it may be brought out through the nose and fastened so that the child cannot bite it in two. The tube is left *in situ* for two or three days, then removed and reinserted if the child again chokes up. Small doses of atropin or even codein are used to advantage, especially if there is much secretion or cough.

Hot steam inhalations of compound tincture of benzoin with occasionally a dram of creosote and two drams of oil of eucalyptus added to the two-ounce mixture, and a dram of this added to the hot water are valuable aids. The steam is used for twenty to thirty minutes every two or three hours according to the condition of the breathing.

Local treatments are usually unnecessary. When the patient is very ill the struggle to administer local treatment may, by damaging the heart muscle, offset all the good done. Usually if the dosage of the serum has been sufficient no local treatments are required.

In conclusion:

1. The value of prophylaxis by the administration of toxin-antitoxin has been proven.
2. In all patients with suspicious throats with croupy cough that do not respond within thirty-six hours to ordinary treatment, or with a bloody excoriating unilateral nasal discharge present, should be given antitoxin and cultures taken. The parents should be assured that even though the cultures are negative the serum will do no harm, whereas if the cultures should be positive the danger attendant in delay has been eliminated and the child given the benefit of early treatment before the damage is done.
3. In the case of carriers a virulence test should be done and if tonsils are diseased they should be removed.
4. Early administration of antitoxin; doses given intraperitoneally in dosage sufficiently large to avoid repetition.

* * *

George E. Ebright, San Francisco—Up to the period of the development of immunization against diphtheria by means of the vaccination of susceptible and non-susceptible children with toxin-antitoxin and the segregation of susceptible and non-susceptible individuals by means of the Schick test, the most important means of combating the occurrence of diphtheria was the recognition and isolation of carriers. While, no doubt, efforts in that direction were attended with a considerable degree of success the universal use of toxin-antitoxin immunization promises to be much more effective than the efforts to control contacts

and carriers in the past have been. For that reason health authorities are at the present time devoting especial attention to popularizing immunization. The picture to be visualized may be sketched in outline by reviewing the history of smallpox. In those communities in which compulsory vaccination against smallpox is universally enforced smallpox cases are curiosities.

When toxin-antitoxin immunization against diphtheria shall have become a universal practice cases of diphtheria with resultant contacts and carriers will also become rare curiosities and cease to be the problem that they now are. It is difficult to estimate when that time will arrive. The state of New York is making an ambitious and determined drive to eliminate diphtheria by the year 1930. Testing and immunization of school children was begun in Auburn in 1922. Fifty-eight per cent of school children were tested and the positive reactors were given toxin-antitoxin. Among the remaining 42 per cent eighty cases of diphtheria and thirteen deaths occurred during the year. In 1923 the percentage of immune children had risen to 73 per cent. In 1924 to 85 per cent. During the four years previous to the commencement of the immunizing work there had been a yearly average of 104 cases of diphtheria and fourteen deaths. This has been reduced to one death in a non-immunized child in fifteen months. It does not require a very profound prophetic imagination to visualize the promise for the future which these results hold forth.

Diphtheria carriers should be quarantined and held in isolation for the same reason that cases of smallpox should be. It is logical to make cultures of all immediate contacts of diphtheria cases and it is advisable that the virulence test be made on all carriers, particularly on those recovered in culturing school or other contact groups. This has markedly reduced the number held in isolation.

In the earlier field work the California state representative spent much time culturing school children. Prior to 1923 all children carrying morphologically diphtheria organisms were held in isolation and large numbers of children were detained in isolation. In the later years virulence tests have been run on all cultures morphologically positive and only those showing virulent organisms have been held as carriers.

The writer is indebted to Miss Stevens, assistant epidemiologist of the California State Board of Public Health for the following epidemiological examples:

"Vallejo—Through September and October, 1919, about forty cases of diphtheria were reported and an investigation was requested. The disease was widespread, so all of the grades were cultured. In all, 2110 children were cultured, and of this number 285 were found positive. Virulence tests were not made. These 285 were isolated, a nurse was employed to follow up all cases and carriers. Our morbidity records show that during the last three months of that year eighty-three cases were reported, and during the first six months of 1920, forty-seven cases. The detection of the school carriers in that instance did not check the epidemic.

"Scotia—In 1920 the County Health Officer requested assistance in controlling diphtheria which had existed in Scotia through three school years. The entire school was cultured and of the 224 cultures, 102 were positive. A public health nurse remained to follow up and supervise all cases and carriers. There were no further cases for several years.

"Ross—In May, 1921, about eight cases of diphtheria occurred among the children of the Ross school and assistance was requested. All of the children were cultured and 39 of the 171 were found to be positive. Virulence tests were not made. Two other cases developed in August, but there were no cases after that. There was a splendid cooperation throughout the community, and a nurse was detailed to the follow up of the group.

"San Mateo—Fourteen cases had occurred in two grades of one school within two weeks and assistance was requested in October, 1922. Sixty-five cultures were taken—all of the children in the two grades. Fourteen were morphologically positive. Virulence tests were run, and of the fourteen only five were determined to be virulent. The five were isolated. Three cases developed during the week culturing was done. There were no other cases until December, when five cases were reported. However, during the year of 1923 thirty-two cases were reported.

"Delhi—In September 1923, the health officer requested assistance in culturing the school. Diphtheria had been epidemic for a period of eight months, and the cases had been released without the prescribed two negative cultures. One hundred and forty-five children were cultured of which fifty-one were morphologically positive. Virulence tests were run on all positives, and only three proved virulent. In November of that year there was another epidemic of fifteen cases. A large percentage of the children had been given toxin-antitoxin in August of that year, and after the November flare-up there were no further cases."

It will be seen from the above that bacteriological examination of carriers must be considered incomplete and unsatisfactory unless virulence tests on all the positives are made. With the machinery now available to health officers such tests are facile possibilities.

Summary—The ultimate aim in the eradication of diphtheria must be universal immunization of all susceptible children. Where it is feasible, susceptible and non-susceptible children may be segregated by means of a Schick test; where that is not feasible all children should be immunized. Until such a time as universal immunization has been reached, bacteriological examination of contacts should be made and virulence tests run on all carriers; and those showing virulent cultures should be isolated.

J. W. Robinson, Los Angeles—Prevention is better than cure, and the department with which I am connected immunize many thousand every year. Toxin-antitoxin is very satisfactory and safe. A few require a second series of injections.

In a case of diphtheria early diagnosis is of the utmost importance. In studying our records, one is impressed by the delay that occurred in every fatal case. This delay, while usually due to failure of the parents to call a physician, or to treatment by a non-medical practitioner, is only too often to be charged against physicians.

Young children frequently do not complain of sore throat. Swelling of lymphatic glands is usually slight or absent.

Fever is not so high as in many other diseases.

Diphtheria bacilli are frequently not found on the first culture. When the false membrane is forming, 12 per cent of first cultures will be negative, while in laryngeal and nasal types the percentages are quite large. So do not depend on a culture report before giving antitoxin. Likewise a positive culture does not always make a clinical diagnosis, as carriers often have sore throat due to other infections.

The following symptoms are nearly always sufficient to warrant the use of antitoxin:

1. Membrane in the throat.
2. Bleeding from the nose.
3. Croup which is as pronounced in daytime as as at night, or one which is not relieved by an emetic.
4. A rapid and weak pulse.

All the antitoxin which is necessary should be given at one time. Forty thousand units should be the minimum in most cases, but in the few seen early, less will be sufficient. Adequate dosage used early will save an intubation and a damaged myocardium. The intramuscular route will suffice in cases seen fairly early. The best location is the outer aspect of the thigh, for the following condensed reasons:

1. The patient can lie on the back and other side.
2. Plenty of tissue even in babies.
3. Relative freedom from nerves.
4. No large blood vessels.
5. Adequate lymphatic supply insuring good absorption.

The patient should be kept in bed and quiet for two weeks or longer. Many have recovered from the initial toxemia to succumb to a strain thrown on a damaged myocardium.

I am *not* in favor of using antitoxin for passive immunity.

The effects are too short of duration. I have seen many cases of diphtheria which had had a prophylactic dose a few weeks previously.

We have had practically no deaths from secondary cases even in families where the first case was treated by others than a physician. All are on guard and at the first symptoms a physician is called and has the opportunity of early treatment.

But where a prophylactic dose of antitoxin had been used the family have been frequently misled into believing that a permanent immunity had been established, and later when diphtheria had occurred were not suspicious until much valuable time had elapsed.

And then there is the danger, slight it is true, of unnecessarily sensitizing in case horse serum has to be used at a later date.

New Hospital for Crippled Children, Minneapolis—It is expected that construction will start this fall on the new William Henry Eustis Hospital for Crippled Children, which is to be built on the campus of the University of Minnesota. The funds for the new hospital, amounting to nearly $600,000 have been provided entirely by Mr. Eustis, a former mayor of Minneapolis, who has established a trust fund for the maintenance of the hospital. The out-patient department will be financed by state funds already appropriated for the purpose.—N. S. Department of Labor.

Full-Time Teachers at Duke Medical—At the annual meeting of the North Carolina State Medical Society, Dr. Wilburt C. Davison, Baltimore, outlined plans for the proposed Duke University School of Medicine at Durham. Doctor Davison was recently appointed dean of the new school of medicine. It is planned, he said, to limit the classes to fifty, and arrange the curriculum so that, with proper preparatory education, the course leading to a degree in medicine should be completed in three years. The teaching and hospital staff will be full-time instructors, amply compensated for their services. Construction will begin soon on a 350-bed hospital, and the school of medicine is expected to open in 1929. A number of physicians are now under observation by the trustees for positions on the faculty.—*Boston M. and S. J.*

Misleading Advertising—Leading physicians throughout the country resent the implication that the medical profession has endorsed the preferential use of a certain brand of cigarettes as a cure or alleviative of throat irritation and for voice protection. In letters to the *Medical Review of Reviews*, which undertook a survey of leading physicians throughout the country to expose misleading advertising, physicians express their resentment and urge the public to be on its guard against accepting endorsements by a small minority as the authentic opinion of the 140,000 physicians of this country. The physicians among whom the survey was conducted were asked two questions by the *Medical Review of Reviews*. The first was: "Do you not agree with us that it is impossible for one cigarette to have any advantage over all others in regard to throat ease or irritation?" to which the answer was almost unanimously "yes." The second was: "Is it not your observation that there is no scientific reason for preference for any given cigarette and that any preference is on a taste basis?" to which the answer was almost unanimously "yes."

Only Physicians may Use the Title "Doctor"—A judgment recently handed down in Ontario makes illegal the use of the word "doctor" by anyone who is not a registered physician or surgeon under the Ontario Medical Act. This is to prevent cultists and healers from attempting to do, after only a few months' study, that for which the regular practitioners spend several years of their life in preparation. Such will no longer be permitted to pose as doctors in Ontario and their prestige may suffer in the eyes of their former sympathizers who were always ready to rally to their support.

This judgment is a sad blow to quacks everywhere, and in Ontario the effect will probably be to drive them out of the province and into new fields. If this tendency to migrate persists, other provinces may follow the lead of Ontario and make it impossible for cultists to further exploit the honorable title of doctor. —*Federation Bulletin.*

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EDITORIALS

HERZSTEIN BEQUEST

In the making of wills the inner soul of the man is often revealed. Volumes have been written on freak wills—on wills that carry a lifelong hatred or malice to the grave; on wills that impose such conditions as make questionable the sanity of the maker, and the legality of the instrument.

Just as some wills reflect the meaner human characteristics of envy, malice, hatred, egotism, and self-laudation, so do others go down to posterity a mirror of friendship, affection, kindliness, advancement of learning and the arts, and of charity to fellow men.

The will of Dr. Morris Herzstein is a testament to the fine spirit that dwelt within the man. His years were filled with work for the sick and the needy—with encouragement of art and of science, with an intense interest in his profession and in his adopted country, and his will clearly testifies to each fine interest.

That Doctor Herzstein appreciated to the full the necessity for a thorough scientific training of every man interested in the health or the life of another, was evidenced by his gift of $20,000 to the California Medical Association to be used in the "suppression of quackery in the practice of medicine."

That he also recognized the only proper means for such suppression, his various gifts to educational institutions and to research laboratories amply evidences. Only when all practitioners of medicine, of whatever so-called school or cult, are equally equipped educationally, will quackery be a thing of the past.

The California Medical Association acknowledges with gratitude the gift and the trust reposed in it. Such faith is a stimulus to closer organization for higher standards of education and better service to humanity.

VIVISECTION; ANTIVIVISECTION: PHILOSOPHICAL THINKING—AS RECENTLY DISCUSSED BY SOME LAY PUBLICISTS

Among the feature writers of the daily lay press, the names of H. G. Wells, George Bernard Shaw and H. L. Mencken scintillate as bright and shining lights. By chance, our eyes caught recent articles by each in three different papers having a bearing on certain phases of medicine and fitting in one with the other in sufficient degree to lead to the following comments.

* * *

Experimentation done in humanitarian wise on lower animals, in the effort to secure knowledge of biologic facts that could be put to effective use in the prevention of diseases among humans so that human health and life might be the better conserved, is a procedure to which medical men almost everywhere subscribe. We acknowledge this desire to acquire more exact knowledge, not only for knowledge's sake, but especially because it permits us again and again to be of more efficient service to our fellow humans who seek our aid. Also, because of our intimate knowledge of the actual facts, we deny the imputations and statements of well-meaning or other individuals who have persuaded themselves, for reasons of which they may or may not be conscious, that medical men in carrying out such experiments on animals do so with callousness to animal suffering and with purposes not scientific or altruistic.

* * *

In a recent Sunday newspaper appeared a feature article by H. G. Wells, famous British writer, captioned "Vivisection Foes Called Champions of Fantasy." To quote a few paragraphs:

". . . What is vivisection? It is a clumsy and misleading name for experimentation upon animals for the sake of the knowledge to be gained thereby. It is clumsy and misleading because it means literally cutting up alive, and trails with it to most uninstructed minds a suggestion of highly sensitive creatures bound and helpless being slowly anatomized to death. This is an idea naturally repulsive to gentle and kindly spirits, and it puts an imputation of extreme cruelty upon vivisection which warps the discussion from the outset. . . .

". . . But the larger bulk of experiments upon animals for scientific purposes involves no cutting about and very little pain. . . . There may be the prick of an injection and a subsequent illness. Where there is actual cutting it is nearly always performed under anesthetics and in a considerable proportion of such cases there is no need for the

animal to recover consciousness and it does not recover consciousness. . . .

". . . Still a residue of cases remains in which real suffering is inflicted. Far more pain, terror and distress are inflicted on the first day of pheasant-shooting every year, for no purpose at all except the satisfaction of the guns, upon the wounded and mutilated birds which escape, than is inflicted by all the scientific investigators in the world, vivisecting for a year. . . .

". . . The antivivisectionist wants legislation to prevent all experiment upon living things for the sake of knowledge. Failing that, he wants to prevent experiment upon dogs in particular, even when the experiment involves no pain whatever to the subject. But you will find that the typical antivivisectionist is incapable of believing that an experiment can be painless. His imagination is too vivid for any assurances to the contrary. . . .

". . . The hatred is not against pain as such; it is against pain inflicted for knowledge. The medical profession is massively in support of vivisection, and its testimony is that the knowledge derived from vivisection has made possible the successful treatment of many cases of human suffering. So far as we can measure one pain against another or the pain of this creature against the pain of that, vivisection has diminished the pain of the world very considerably. But the antivivisectionists will hear nothing of that. They will hear nothing of that because it is not material to their conception of the case. . . ."

* * *

The excerpts from H. G. Wells' article are so much in accord with the truth, as thousands of medical men know the truth from their own actual experience, that they are willing to subscribe to them as a plain and honest statement of actual fact.

* * *

Witness now George Bernard Shaw, who two months later in another Sunday newspaper comes back in a reply article under the heading, "Shaw Flays Wells on Vivisection; Fabian says Pain Lovers Hide Cruelty in Name of Science; Experimenters' Plea that Beast is Man's Inferior Denied."

Here are some quotations:

". . . We have got it at last from H. G. Wells, the author. The vivisector experiments because he wants to know. He is driven by a will for abstract lucidity. . . .

". . . From that time forth medical students were taught to advocate and defend vivisection as an essential tenet of scientific faith. . . .

". . . As a matter of fact, we do not tolerate vivisection on these absurd grounds; we cling to it dishonorably because we are repeatedly assured that it has led to the controversy of cures for our diseases, and we are prepared to snatch at any dirty recipe for immortality rather than face death like ladies and gentlemen. . . .

". . . When one thinks of the Rockefeller funds, the cancer research funds and the rest of the money that has gone down the vivisectors' sinks during the past quarter century and compare their worse than negative results with the amazing series of discoveries made during that period by physicians doing sheer brain work within the strictest limits of honor, it is difficult to resist the conclusion (not that any normal person wants to resist it) that only imbeciles can be induced to practice vivisection and glory in it. . . ."

* * *

So there you have it. George Bernard Shaw has worked it all out in his own mind and with his facile pen makes a picture pleasing to himself and his antivivisection friends who philosophize in similar fashion.

If their fantasies—far removed from actual facts, as thousands of God-fearing medical men throughout the civilized world can testify—reached only their own group of imaginative and emotional and sentimental persons, the world would need little concern itself with the vaporings. Such statements are, however, read by thousands of the laity, who thus become prejudiced against scientific medicine, take up cultist fads, and often pay for their gullibility at a health or even life price.

* * *

After a perusal of Shaw's promulgations, it was refreshing to run across in a third newspaper a column conducted by H. L. Mencken. The title of his article was "The Revival of Philosophy." Mencken's opinions seem to apply so pertinently to the psychological state one would imagine Shaw to have been in when he wrote his article, that the following excerpts are here given:

". . .The ancient nonsense known as philosophy seems to be enjoying a considerable revival in the world, and especially in the United States. . . .

". . . The essence of philosophy is the theory that it is a waste of time to hunt facts—that all the problems which harass *homo sapiens* may be solved, so to speak, with the naked mind. A philosopher is one who, by simply sitting down in his studio and yielding himself to thought, is capable of concocting an answer to any conceivable question, including even the question as to how, why, and with what he thinks. . . .

". . . The scientists hold that going into a room and sitting down to think is, in nine cases out of ten, a bad way to get at the truth. They believe that the conclusions reached by the process tend to be ingenious rather than sound, and that in any event they are determined more by the philosopher's blood pressure, digestion, and theology than by the actual state of the facts. As an alternative, they propose going to the facts themselves and letting them tell their own story. This is the so-called scientific method, which is based upon experiment and observation rather than upon cogitation. True enough, it admits some cogitation, too, and so it is occasionally corrupted by purely philosophical errors, but on the whole it is manifestly safer and more accurate than the method of the philosophers. . . ."

* * *

In the three articles above quoted, it is noted: one, that Wells presented a fair statement of the reasons for and the need of animal experimenta-

tion; that Shaw gave a typical sample of the logic indulged in by the antivivisectionist group; and, that Mencken explained how Shaw's kind of reasoning came into being, and what was its worth.

* * *

In the last fifty years, diseases which formerly caused a tremendous toll in human misery and deaths have been brought under subjugation. In the last one hundred years the average life space of humans in the western world has been marvelously increased. That increased number of years in which to live and to serve in the world, largely has come about through scientific research devoted to the study and elaboration of newly discovered and applied scientific facts in relation to the human body, and its functions.

What a sad reflection on the type of modern-day intelligence and culture, that so many lay fellows through philosophical contemplations associated with emotional and unstable mental functioning let their vision of these actual accomplishments of scientific medicine in recent years, in the conservation of human health, life and happiness become so warped, that they are unable to appreciate what that scientific progress has meant to the prosperity and happiness of the human beings and living things in this world in which we of today have our earthly existence.

AN OUTSTANDING COUNTY HEALTH DEPARTMENT

Recently a copy of the 1927-1928 budget of Los Angeles County, compiled by the county auditor, came into our possession. Los Angeles County, with its area of some four thousand square miles, is about two-thirds the size of Massachusetts, and the total assessable wealth of its estimated population of two million, two hundred thousand citizens, is estimated at three billion, three hundred and seventy-one millions of dollars. In the auditor's report of some two hundred large folio pages, there was a presentation of statistical detail dealing with public finances that was quite appalling.

The total appropriations for the cost of government in this county for the current fiscal year came to a grand total of practically thirty-four millions of dollars.

The health and sanitation appropriations totaled $3,271,880.00, and the charities, hospitals and corrections mounted to $12,098,177.00!

* * *

The Health Department of Los Angeles County was credited with an appropriation of $1,053,-028.00 for the fiscal year.

Endowment funds can rarely be invested in sound securities to net more than 5 per cent; and when so invested, give an annual interest return of fifty thousand dollars on an endowment of each one million dollars.

The Los Angeles County Health Department operates therefore, as if it were receiving the interest return on what would be an endowment of twenty-one millions of dollars! In that light, the annual budget of the department certainly seems staggering.

* * *

Large as is the sum, it becomes more astounding when one realizes that ten years ago when Dr. J. L. Pomeroy, the present county health officer, assumed office, his total budget for the year was only seven thousand two hundred dollars, that sum paying the salaries of himself, a stenographer and one inspector. The entire equipment of his department was contained in a small room in the old court house.

In the intervening ten years, the annual appropriation for the County Health Department work has increased to the amazing figures previously given.

When the current year's appropriation of $1,053,028.00 is divided by the $7,200.00 appropriation of ten years ago, it is found that the budget today is one hundred and forty-six times as great as then.

Therefore, the increase of appropriation in this decade, when expressed on a percentage basis, shows that in the current year the department's appropriation is 14,600 per cent greater than ten years ago! This increase in actual sums and percentage probably cannot be duplicated in any other county or similar governmental unit in the United States or abroad.

* * *

The trend of preventive medicine in community life is most significantly shown in the astounding figures which have been presented. These figures speak volumes in showing how effective has been the propaganda in preventive medicine which the lay press years ago accepted upon the initiative of physicians, who stressed the need of cooperative community effort if water- and air-born diseases, as typhoid and smallpox, and scourges such as tuberculosis, which were intimately connected with faults in our social fabric, and other diseases, were to be eliminated or held down to a minimum expression.

* * *

Without such an awakening of the public comprehension and conscience through this educational preventive work in which physicians were and still are the pioneers and leaders, it would have been quite out of the question for any board of supervisors or public officials to have appropriated such vast sums for public health work as are here quoted. And in equal measure, it would have been impossible for a lone county public health officer, as was practically the case in regard to Dr. J. L. Pomeroy of Los Angeles, to have induced successive boards of county supervisors to embark on more and more public health work, and be willing to expend greater and greater sums therefor.

* * *

The questions will naturally be very promptly put: "How is this tremendously large annual appropriation used? Is its use confined to strictly preventive public health work, or does it through state medicine and superpaternalistic methods

improperly trench over into the fields of curative or personal health medicine?"

To answer those questions and many others of analogous import, which very properly could and should be asked would require a detailed study of the Health Department referred to, and at this time and in this place that is not possible. However, such questions and such studies should be made by the organized medical profession, for the protection of the interests of both the public and its own members; and the results of such careful surveys should be placed on record for both the profession and lay citizens.

* * *

It may be stated that the auditor's report which is under discussion, shows a County Health Department personnel of 288 persons, the total salary appropriations mounting to $172,078.00.

The activity divisions of the department include among others the following: administration; communicable diseases; vital statistics; quarantine; sanitation; milk; food; water; child hygiene; public nursing; school nursing; oral hygiene; fresh air schools; tuberculosis; immunization; laboratory; housing.

* * *

One of the interesting expressions of this department's work is its cooperation with some twenty-five of the smaller municipalities of the county, giving each of these cities public health supervision and cooperation, the estimated cost usually being divided equally between each city and the county. The reason being to give a better public health service for the same amount of money.

* * *

Another very interesting activity is the health centers, which are operated under the supervision of the County Health Department, in special buildings erected by the county, the medical and surgical work being under the control of an attending staff chosen from the physicians of each district. Here some new problems are being solved, but always with the thought in mind of full cooperation with the organized profession.

* * *

From what has been here presented, it is evident that many interesting phases of the public health work of Los Angeles County might properly be discussed. On some future occasion this may be possible.

EPHEDRIN—A RECENT ADDITION TO WESTERN MEDICINE, BUT CENTURIES OLD TO THE CHINESE

Chinese herbs and Chinese herb doctors are no novelties to Californians.

True, the enforcement of the state medical practice act has eliminated the "Chinese doctor" pretense, so today the dispensers of the herbs must be content to hold themselves out as merchants selling herbs, much as clerks in a modern drug store sell patent medicines. Then again, Chinese herb concoctions often have been far from palatable, and for that reason are usually as unattractive to Western eyes as are the dried fish and what-not imported food products so often on display in the grocery or food depots of a Chinatown district.

With an alien tongue, medicaments unpleasant to eye and palate, and a therapeutic system based on a philosophy and empiricism not readily understood by the Western brain, it is little wonder that practically all Chinese drugs and methods have been dismissed with little more than shrugs of the shoulders by Western physicians.

* * *

Yet Chinese medicine goes back into a legendary period that antedates very considerably the earliest medical records of Westerns. Sheng Nung,[1] the Chinese father of medicine (B. C. 2737), is given credit for compiling the "Great Herbal." The Nei Ching or "Canon of Medicine" is supposed to have been written about B. C. 1000.

In the Tang dynasty, about A. D. 652, a book entitled "Thousand Gold Remedies" and consisting of sixty volumes appeared.

* * *

A citation of some modern Western discoveries, in contrast with the Chinese may be of passing interest:

The catheter was mentioned by Chinese physicians in the seventh century A. D., although Western physicians place its discovery to the credit of Nelaton in 1860.

Organotherapy was early recorded in China, for sheep thyroid for goiter was used by the Chinese in the sixth century, A. D.

Inoculation against smallpox was used in China as early as 1022, A. D.

Chinese state medical schools and examinations are of record in 1068, A. D.

The foregoing notes are given because only recently K. K. Chen, Ph. D.,[2] a native of China and a former student of the University of Wisconsin Medical School, called the attention of Western physicians to Ma Huang, an herb known in Chinese medicine for some five thousand years, and the active principle of which is the alkaloid ephedrin.

Chen, after working out the active principle, found that a Japanese, Nagai, in 1887 had already accomplished this, and that E. Merck, in Germany, also reported the process in 1888.

Ephedrin is much like adrenalin in its chemical structure and in its action on the human tissues, and was discovered before adrenalin had been worked out. Strange to say, however, its significance had escaped the observation of Western clinical observers until Chen's presentation of its physiological action in December, 1924.

Here was a Chinese drug Ma Huang, used and understood by the Chinese for hundreds of years, with an alkaloid possessing distinct advantages

[1] For an article on "China's Contribution to Medicine in the Past," see Annals of Medical History, Volume viii, No. 2.

[2] The Action and Clinical Use of Ephedrin, Journal A. M. A., September 11, 1926.

over adrenalin for certain purposes. In the last two years it has come into very generous use, particularly among rhinologists, and among internists paying special attention to asthma.

Ephedrin has a pharmacologic action much like that of adrenalin, but its effects last longer. It is more stable, and acts well when given by the mouth. It has a low toxicity. It shows active effects on the circulation, on secretion and on smooth muscle. It seemingly has no habit-forming tendency; and only a few distressing effects such as occasional tremor, weakness and nervousness have been observed.

It is especially valuable in bronchial asthma and of good use in certain congestions of the nasal membrane such as hay fever. Although it raises the blood pressure, its real clinical value in hypotension has not yet been agreed upon.

* * *

The rediscovery of this drug known for centuries in the written records of the Chinese, and the recent reisolation of its alkaloid, ephedrin, which was originally isolated prior to adrenalin, and the tardiness in the recognition of its worth, shows how necessary it is to be on the alert for valuable agents and adjuncts in our therapy, even in this day when exploitation of new remedies is so general. We must acknowledge that a drug like ephedrin, antedating adrenalin and in many ways very similar in valuable action, seemed hardly to need the period from its original isolation in 1886 to its reisolation in 1924, to make Western medical men appreciate its worth. Chinese who appreciate how prone Westerners are to look upon the Chinese as one of the so-called backward peoples have seemingly in this instance, an opportunity to quietly smile in their sleeves at Western backwardness.

HONOR TO ALUMNI

Vanderbilt Hall, the new dormitory for the students of the Harvard Medical School was dedicated last month. The memory of former students whose names are known throughout the medical world is there perpetuated. The student room is named for Charles Best, co-discoverer of insulin with Banting; the dining hall for Bowditch; the living room for Mixter; and over forty of the students' suites for other illustrious alumni.

Thus the names will live. If to this could be added a memorial day when talks were given on the men so honored, perpetuation of the real personality would be effected. Surprising it is how few generations are necessary totally to erase the picture of one who was an inspiration to his own generation, beloved by his students, honored by his fellow practitioners, and the idol of his clientele.

If at every alumni meeting the life of a former colleague were read, the historical archives of the Association would shortly be complete. How much better such effort than the usual prophetic and inane forecasting of the graduation class' future.

California has a Lane and a Barlow Library; she had a Toland Hall, but how few so honored compared with the many forgotten. Is it not time we followed the Harvard custom of immortalizing names?

The Best Method of Vaccination—The best method of vaccination is probably the "multiple pressure or prick" method. This consists of a shallow, tangential pricking of the cleansed, but not irritated, skin with a needle, through a drop of smallpox vaccine, covering an area not greater than one-eighth of an inch (3 millimeters) in diameter. This gives little chance of accidental infection and the eruption is typical. Acetone has been found satisfactory for cleansing the skin. It is somewhat more efficacious and rapidly drying than alcohol. The needle, which should be new, sharp, and sterile, is not thrust into the skin, but is held quite parallel or tangential to it, with the forefinger and middle finger of the right hand above the needle and the thumb below, the needle pointing to the operator's left. The needle should be crosswise of the arm so that the thumb of the operator is not impeded by hitting the skin. The side of the needle point is then pressed firmly and rapidly into the drop about thirty times within five seconds, the needle being lifted clear of the skin each time. This rapid to and fro motion of lifting the needle and pressing it against the skin should be quite perpendicular to the skin and needle, and not in the direction of the needle. In this way the elasticity of the skin will pull a fraction of an inch of the epidermis over the point of the needle at each pressure so that the vaccine is carried into the deeper epithelium (cuboidal prickle-cell layer), where multiplication takes place most easily. If the skin has not been unduly rubbed in cleansing, and if the motion is entirely perpendicular to the needle, no signs of bleeding will occur and all evidence of the punctures will fade out in less than six hours. Immediately after the punctures have been made the remaining vaccine is wiped off the skin with sterile gauze and the sleeve pulled down, the whole operation of puncturing and wiping taking less than ten seconds. With strong vaccine a single pressure not infrequently gives a "take." Only six pricks or punctures were formerly advocated. Comparative tests showed this to be inferior to the scratch method of percentage of "takes." By the use of thirty pricks this difficulty has been overcome, and the percentage of "takes" is as high as with any other safe method. For primary vaccinations, where the mildest possible "take" is desired, and where other attempts with highly potent vaccine will be made promptly if the first is unsuccessful, the number of "pricks" may be reduced to ten, or even to one.

The disadvantages of this method, which it shares with some other methods, are, first, that without demonstration and practice the technique of applying the proper pressure may not easily be acquired, and second, that without due care an area larger than one-eighth of an inch (3 millimeters) in diameter may be covered by the insertion. In regard to the first point, the difficulty is usually that the needle is not pressed in the right direction or that the pressure is not firm enough. Provided the needle is held quite tangential to the curve of the arm, and the direction of motion is quite perpendicular to the needle, it is difficult to make the rapid pressures too firmly. In regard to the second point, motion from the wrist with the arm held rigid is usually more accurate than whole-arm motion.

The advantages of this method are its mildness and painlessness, the fact that it is more rapid than any other effectual and safe method, the fact that no control site is necessary, since the evidence of trauma due to the operation has disappeared before the first observation for an early reaction is made, and the fact that the vaccine is wiped off immediately, so that the uselessness of a dressing is obvious to the person vaccinated.—*Ohio Health News.*

MEDICINE TODAY

Current comment on medical progress, discussion of selected topics from recent books or periodic literature, by contributing members.

Neurosurgery

Gliomas—Of the intracranial tumors gliomas represent between 40 and 50 per cent. Their frequency, infiltrating character and often rapid course have made them most feared. Frequently, however, cystic changes are found in which a small portion of solid glioma is associated with thick yellow highly albuminous fluid. These have been welcome findings, as clinical improvement is generally prompt, often striking, and long leases of life are frequent. Cerebellar tumors are relatively more frequent in children than in adults and in them cystic change is particularly common. In other gliomas the degree of malignancy as attested by rate of growth and infiltration of tissue varies during the life of the tumor. We have seen a large cyst completely filled and obliterated in six weeks by solid glioma. Certain other gliomas which show calcifications are relatively benign, run a course of years and retain fairly definite limitation of the growth. Removal of these may give freedom from symptoms and apparent cure for years before recurrence takes place.

Bailey of Cushing's Clinic using the methods of the Spanish school of neurohistologists—Cajal and del Rio-Hortega—has by means of their special staining reactions undertaken to arrange a classification of gliomas. He has submitted a classification of gliomas comprising twenty types on the basis of their histogenesis.

In "Tumors of the Glioma Group by Bailey and Cushing" the authors present their classification and give their observations of the clinical course of patients having these different cell types of tumors.

As elsewhere in the body the tumors which reproduce the more highly differentiated cells grow less actively and are relatively benign. Radical removal of these is well repaid.

Three of the classified groups, viz., the oligodendrogliomas and the protoplasmic and fibrillary astrocytomas comprise about 40 per cent of the gliomas. All of these are relatively benign and thus warrant radical removal.

Predictions of certain types of glioma under some conditions may be made with some degree of accuracy. In our own experience the midline cerebellar tumors springing from the region of the roof of the fourth ventricle and occurring in children often gave vomiting as a first and only symptom over a considerable period of time, even many months, before other localizing signs or general pressure signs appear. In the classification of these authors these prove to be the medullo blastomas which, from a limited observation, seem to be more favorably influenced by x-ray than are many other types.

Familiarity of the surgeon with the gross and microscopic appearance of glioma types should serve in the future as a guide to the type of operative treatment required in this large group.

HOWARD C. NAFFZIGER,
San Francisco.

Tuberculosis

Mechanics of Respiration—Dr. Willia S. Lemon, Chief of the Department of Diseases of the Lungs at the Mayo Clinic, reported a very interesting "Experimental Study in the Mechanics of Respiration, Including the Diaphragm and Its Importance in Respiration." The work was done on dogs.

Exeresis of one phrenic nerve was performed. Radiographic examination following this showed that the diaphragm on that side was paralyzed, though it was not possible to demonstrate any changes by physical examination. The dogs' behavior and respiration were to all appearances normal. When exercised with normal dogs (running uphill), they breathed no more rapidly or laboriously at the top of the hill than the controls.

A similar operation was then done on the other side, resulting in paralysis of both domes of the diaphragm, and still the animals behaved and breathed normally while quiet, and after exercise exhibited no respiratory embarrassment or lack of endurance.

On other animals the lower intercostal nerves on one side were sectioned as close to the spine as possible. This resulted in paralysis of the corresponding intercostal muscles and the upper muscles of the abdomen, which became quite flaccid. These animals showed no change from the normal in their behavior or breathing either at rest or after exercising.

The lower intercostals on the other side were then sectioned in a similar manner without apparent ill effect.

Section of all the intercostal nerves on one side was also without any demonstrable effect on the dogs' respiration.

All the intercostal nerves on the other side were then treated similarly, and still no bad effects could be detected.

In addition to all the intercostal nerves, first one and then the other phrenic nerve was divided, and the animals continued to live and exercise with little or no impairment of the respiratory function. In cutting the intercostal nerves it was impossible to get the complete nerve, and the mus-

cular innervation supplied by the small portion of the nerve lying between the point of division and the spinal cord was sufficient to carry on respiration.

It was found, however, that when these dogs were subjected to a general anesthetic these muscles were inadequate to maintain sufficient respiration to keep the dogs alive.

Section of the spinal cord in the neck was tried, and it was found that cutting of the cord one vertebra below the lowest point which was fatal did not visibly affect the respiration of the animal. In this case, just as in the case already mentioned, the administration of a general anesthetic was followed by death.

These experiments are of special value in view of the recent popularization of the operation of phrenicotomy or, as Doctor Lemon prefers, "exeresis of the phrenic nerve," and appear to establish the operation as one in which the risk of unfavorable results (apart from the condition of the lungs presumably already diseased) is not great. Their publication will be awaited with great interest.

CHARLES C. BROWNING,
Los Angeles.

Neurosurgery

Tic Douloureux—Harvey Cushing once wrote that of five individuals who consulted him because of trigeminal neuralgia, four were sent by former patients, and one by a physician. Nor is his experience unusual, as the records of any neurosurgeon will show. Why should such a large proportion of patients afflicted with one of the most painful of diseases be referred by those who have been cured, and not by the doctor? A consideration of the natural history of tic douloureux shows that part, at least, of the blame can be placed on the peculiarities of the disease.

The first attack of pain is almost invariably located in the superior maxillary or the mandibular division of the nerve, and the patient naturally thinks that a diseased tooth is at fault. He has teeth extracted without relief. The physician who sees him at this stage should remember that pain in a peripheral branch of the fifth nerve, caused by disease of some organ of the head, is constant, does not stop at night, and is not made worse by external stimuli; while the pain of tic douloureux comes in flashes, is brought on by motion of the face, and is absent at night. If the physician advises extraction of more teeth or operations on nasal sinuses for tic douloureux, he loses that patient's confidence when the pain continues. Until the diagnosis is made, one method of treatment after another is tried by a series of advisers, medical or otherwise. Sooner or later, because of the intermittent character of the disease, the pain suddenly stops, and the patient believes that he is cured. After an interval of weeks or months a second attack begins, and the treatment which cured the first attack is without effect. Other therapies are tried, and again there is an interval of freedom. Before long the patient loses faith in all advisers, and he may refuse the proper treatment when the diagnosis is finally made. But when he meets a person who has been cured, and finds that his disease is exactly the same thing, he goes with confidence to the surgeon who treated that patient.

There are only two effective methods of treatment. Injection of alcohol into the involved division of the nerve gives relief for a period that averages from twelve to eighteen months. The affected area increases with succeeding attacks, the attacks last longer and the free intervals get shorter, it becomes increasingly difficult to inject the nerves because of formation of scar tissue, and eventually all patients come to operation. Division of the sensory root proximal to the Gasserian ganglion gives permanent relief from the pain. The dangers of this procedure are frequently put to the incapacitated sufferer on the basis of the high mortality of the early days of the operation. Many surgeons now have large series of cases with a mortality of less than 5 per cent. Considering the advanced age of most of these patients, such a mortality is low for an operation which assures freedom from unbearable pain.

E. B. TOWNE,
San Francisco.

Gastro-intestinal Disorders

Duodenal Regurgitation—The importance of duodenal regurgitation is now being grasped by clinicians, and as it is being more thoroughly understood it is providing important help in solving some of the so-called "functional disorders" of the stomach that have for years been so baffling.

Boas, Ewald, Pavlov, and other physiologists have taught that acids in the stomach were neutralized by a "special gastric secretion," thus diluting, neutralizing and diminishing its secretion. Boldereff, a pupil of Pavlov, has shown that this influence is confined entirely to dilution by a "thin mucus," and therefore a negligible factor. Boldereff [1] in a recently published article gives a series of animal experimentations which show conclusively that the acidity of the stomach is self-regulatory by means of regurgitation of the alkaline duodenal contents. Reading of the article is very much worth while by those interested in applied physiology of the gastro-intestinal tract.

The stomach is the favorite seat of symptoms that are often reflex from some distant abdominal point. This makes it "the spokesman" for many conditions. The clinician, and especially the gastroenterologist, is successful largely in proportion

to his success in ferreting out the origin of these reflexes.

One of the most common reflexes reaching the stomach is a spasm of the pylorus, and in the light of our present knowledge of the physiology of this sphincter it is easy to understand its upsetting influence. One gets a most illuminating vision of some of the old functional disorders such as high acid gastritis, by reviewing the literature on duodenal regurgitation, and the regulation of the gastric acidity.

Boldereff's article is a very stimulating one. It helps us to see the complexity of clinical medicine, and shows how futile are attempts to control many gastric symptoms by local treatment and drug medication, when such symptoms are in reality due to some distant reflex upsetting the control of acid and other gastric secretions by disturbing the regurgitation of the alkaline duodenal contents through a functional pylorospasm.

The removal of an appendix or a gall bladder, the correction of constipation or some irritating pelvic disorder although apparently very remote, may through a reflex arc fully relieve distressing gastric symptoms by re-establishing the duodenal regurgitation.

R. MANNING CLARKE,
Los Angeles.

Physical Therapy

The Trend of Modern Medicine—Not so many years ago, after Virchow had infused into it a new spirit of investigation by his cellular pathology, and medicine was establishing itself on a scientific basis, physicians were satisfied to make a diagnosis. Treatment, if any, was more or less empiric. A correct diagnosis and a prognosis based on the experience gained from countless post-mortem observations was the desired end of consulting work. In the Vienna school at the time of Skoda and Rokitansky, it is said that the ideal patient was he on whom Skoda could make the diagnosis and Rokitansky could do the autopsy to verify the observations and opinions previously set down on the clinical chart. Even the great Osler, whose textbook meant so much to English-speaking medical students, would devote pages to pathology and diagnosis, but would dismiss therapy in a short paragraph.

Then followed the brilliant years in medical history when the seeds sown by Pasteur and Lister began to bear fruit. Modern surgery had arrived, and instead of studying post-mortem pathology the surgeon demonstrated that living pathology of which Moynihan so delightfully enlightened us in his classic essays and addresses. Surgery began to accomplish things undreamed of from a therapeutic standpoint, while pharmacologic therapy was content to use those remedies which had been in vogue so many years and whose virtue was too often empiric. Concomitant with the rise of scientific medicine came amazing progress in the fundamental sciences of chemistry, physics, and biology. Pasteur's contribution to bacteriology and Lister's to antisepsis were the early incentives for the search of so-called specific remedies on the part of chemist and pharmacologist.

For many years it has been apparent that there are individuals who are sick, but whose ailments yield very slowly or not at all to surgery or medicine. Orthopedists and neurologists who see many patients of this type have long used physical methods of therapy, such as massage, graduated exercise, or as some form of the various electric modalities. It remained for the recent war with its reconstruction of human wreckage to focus our attention on the value of these aids. Today, if we were to accept the statements that come to our desks from the jobber and manufacturer, no physician's office would be complete without one or more of the physical therapeutic appliances. These include machines built to give radiation of various types—x-ray, ultra-violet ray, or thermic ray—as well as high frequency machines that are used in diathermy. To this may be added radium, which any physician may procure in the form of radon and which he may apply by following written instructions, though he himself has had no experience or training in its use.

We owe much to the commercial interests in producing appliances which are reliable and easy to use. In their zeal for increased financial returns, these various products are placed in the hands of men who have neither the training nor the time to devote to this line of treatment. Commercial production and salesmanship have outstripped scientific investigation to such a degree that physical therapy is being heralded as the long-looked-for millenium. It is true that much of the therapy which we have found useful today is empirical in nature. The wave of enthusiasm for therapeutic endeavor along physical lines will be followed in a short time by a wave of discontent and the pendulum will swing to the other extreme unless the limitations are recognized. Anything worth while will stand, but that which does not rest on a firm scientific basis will be discarded.

Physical therapy, including therein x-ray, radium, and phototherapy, is a large field. It is as truly a specialty as surgery or internal medicine. Its opportunity for doing good is limitless, while its latent and invisible powers are great enough to be fraught with excessive danger to patient and practitioner alike, if wrongly applied. It requires years of careful clinical training to become an adept in deciding where one should be applied and where the other. Despite twenty-five years of radiation therapy by x-ray and radium we are far from the desired goal of perfection. No amount of research along purely physical lines will solve problems applicable to biology and physiology. Biological research and clinical experience must do this for us.

The American Medical Association has done organized medicine a great honor in creating a council on physical therapy, thereby giving to physical methods of therapy that recognition to which it is justly entitled. It has been a great boon to

1. Bulletin of the Battle Creek Sanitarium and Hospital Clinic, May, 1927.

the practitioner, showing him the conditions which experts have found will yield to physical methods.

The field has just been scratched. We know considerable about the massive destructive effects of x-ray and radium since the cancer problem has called our attention to the successful application in that disease. The effects of these agents in milder dosage where the immediate results are apparently stimulating rather than destructive is also interesting. This is especially true in the so-called "hypo" phases of endocrine disturbances. In other words these potent agencies are opening the fields that the endocrinologist has been attempting to rejuvenate by substitution therapy. Likewise in the various inflammatory conditions physiotherapy has been used long enough to show us that it competes with surgery in some cases. It will not replace surgery in all cases, but it will be a useful ally in restoring health to cells and tissues which have long been crippled by infection and exudation. The various skin conditions—acne, carbuncle, furuncle, tuberculosis of the glands, joints and peritoneum—are all amenable to physiotherapy. What the future has in store for us is still unknown, but what is known should be mastered so that physical methods will take their rightful place in the evolution of scientific therapy.

ORVILLE N. MELAND,
Los Angeles.

Tropical Medicine

Clonorchis Infection—For two reasons the physicians in California are concerned with the disease called clonorchiasis. First, it is a fairly common parasite among the Chinese and Japanese residents of California. Second, immigrants subject to it are excluded under the immigration regulation forbidding admission to persons having "dangerous contagious disease." "Contagious" is interpreted to mean "communicable." In the matter of treatment, therefore, as well as in the question as to the rightful exclusion of this disease, the physicians in California have a direct interest.

The clonorchis, or liver fluke, so far as is known, only invades man in one way. The encysted larvae are ingested with uncooked fish, are released in the duodenum and make their way to the bile capillaries where the adult worms develop. If there is bile obstruction the pancreas may be invaded. These worms are leaflike or trematode worms, and damage resulting from their presence seems to be proportional to their number. E. C. Faust at Peking Union Medical College has recently made solid contributions to the knowledge of their life history. His work corroborates and extends the results of several excellent Japanese parasitologists, *e. g.,* Nagano and Katsurada.

Briefly, Faust finds that the ova of clonorchis, leaving the human host in the feces, are swallowed by certain species of fresh-water snails, provided the water is of sufficient warmth. In the snail, development takes place from a larva into a free-swimming cercaria which is very delicate, but which under proper conditions of warmth is swallowed by certain species of fish and encysts in their flesh. The common oriental use of dried, raw and insufficiently cooked fish transfers the infection to man. No other means of human infestation is known.

The longevity of the adult worms in man is calculated at from five to fifteen years at the maximum. It is to be noted, however, that Dunlop Moore has reported two cases where the infection persisted twenty and twenty-five years respectively after leaving China. In any case it is a self-limited disease, barring reinfection.

Inouye, a Japanese clinician, has classified the disease as follows: (*a*) mild cases with no evident symptoms; (*b*) secondary stage, with diarrhea, edema and hepatic hypertrophy; and (*c*) severe type aggravated by involvement of hepatic portal system. In Japanese patients he found jaundice rare, but noted 50 per cent with enlarged, smooth livers; 33 per cent with dull pressure pain over liver; 12 per cent with enlarged spleen; 15 to 40 per cent with ascites; 66 per cent with diarrhea; and only 4 per cent with normal stools. In China the disease as a rule is not considered serious or dangerous. As has been said, mass of infection is of primary importance, and exposure to conditions allowing frequent or constant reinfection is a major consideration in the gravity of the disease.

Treatment in general has been ineffective. However, in late years cases have been reported cured by G. C. Shattuck in Boston and Reed and Wyckoff in San Francisco, using courses of tartar emetic intravenously, preferably in association with neosalvarsan.

Two problems are evident in California with reference to clonorchiasis: (1) Is there danger of the disease spreading from patients already in California? (2) Is there danger of endemic foci being established in California? The answer to both questions is in the negative. Wayson notes that no infection has ever been proved in California snails, even though species presumably infectible are abundant. He also points out that California streams are cold, thus inhibiting and destroying these delicate larvae and cercariae. The intermediate cycle requires specialized molluscan and piscine hosts and the necessary warmth of pond waters. In Pacific Slope states the previous factors plus the good sewage disposal and the non-use of uncooked fish make it a practical impossibility for clonorchiasis to spread or gain endemicity on the Pacific Coast. No single case of such spread or transmission has yet been reported. These considerations lead one to question the justification of rating clonorchiasis as a "dangerous contagious disease," and as a sufficient ground for immigration exclusion.

That this conclusion is justified is shown by the very recent removal of clonorchiasis from the list of excludable diseases.

ALFRED C. REED,
San Francisco.

STATE MEDICAL ASSOCIATIONS

CALIFORNIA MEDICAL ASSOCIATION

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OFFICIAL NOTICES

State Dues—State and county dues are payable January 1, 1928. Prompt payment avoids thoughtless delinquency. Few members evade payment. The surprised and apologetic responses to notification of delinquency letters furnish ample proof that negligence and not intention is responsible. To the dilatory, CALIFORNIA AND WESTERN MEDICINE is not mailed after April 1, and the missing copies can seldom be furnished to reinstated delinquents. Help your county and state office by the habit of prompt payment of annual dues on the first day of each year.

* * *

State Association dues range from $20 in Washington, D. C., to $2 or $3 in Alabama, Arkansas, Mississippi, and North Carolina. Arizona and Minnesota charge $15. The usual is $8 and $10. Massachusetts, who was able to keep to $5 dues for many years, is now advocating the necessity for expansion of service by a raise from $8 to $10. California state dues for 1928 were fixed as of $10.

* * *

When members inquire what they get for their dues they want a statement of tangible returns: the Journal, the State Meeting, the Placement Bureau, the Extension Service, the Medical Defense and possibly a Library Service.

The greater and more intangible values of membership are but dimly visioned by these practical minds.

Were there no ethics of the Medical Association every practitioner of medicine could formulate his own code and, in proportion to his financial stress, allow his standard to be deflected.

Were there no Council of Pharmacy to pass upon the merits and demerits of drugs the shelves of pharmacists would groan again under the load of quack nostrums.

Were there no standard of medical education the incompetent would be indistinguishable from the competent.

The stimulus to continued progress is largely furnished by the interchange of thought at medical gatherings, by the writing of papers, and by the discussion of papers of others. The man who takes part is the mentally progressive—he who recognizes his mental inferiority shuns discussion. The intangible stimulus to renewed mental interest is more than compensatory—the friendships there formed, and cemented, cannot be counted in money value.

Medical organization with all its tangible and intangible value is made possible only through membership in county, state, and national associations. In California of 7699 licensed physicians 4328 are members of our Association. Of those not now members at least one-third would gladly join were they cordially invited. We again urge each county secretary to review carefully the reason why each non-member in his county is not a member of the California Medical Association and to express to every eligible man in his community the earnest wish that he apply for membership in the California Association.

* * *

Council Meeting—The next regular meeting of the Council will be held on Friday, January 20, 1928, at the Palace Hotel, San Francisco.

COMPONENT COUNTY SOCIETIES

ALAMEDA COUNTY

The regular meeting of the Alameda County Medical Association was held at the Ethel Moore Memorial Building, October 17, 1927, at 8:20 p. m. In the absence of President George Rothganger the meeting was called to order by Vice-President J. L. Lohse. The program of the evening was presented by the San Francisco County Medical Association.

Dr. Harry Spiro discussed "X-Ray of the Heart and Aorta," saying that in his opinion it was the most useful diagnostic and prognostic agent at the command of the cardiologist. The doctor conceded the usefulness of properly taken histories, physical examinations, and electrocardiograms, but felt that the x-ray was the most helpful agent at our command. He pointed out that the chief source of error in x-ray interpretations was due to improper position in taking films, and impressed the fact that rotation of the patient to proper angle was absolutely necessary in order to get data that were of use to the clinician. The doctor showed moving pictures of his methods of making orthodiagrams and of measuring the various diameters of the heart and aorta. His paper was discussed by Dr. William Sargent.

The second paper of the evening was by Dr. John Homer Woolsey, who spoke on the subject of "Acute Osteomyelitis of the Lower Jaw." The doctor illustrated his talk with lantern slides showing that the infection traveled along the inferior dental canal and emphasized the importance of conservative treatment consisting of simple incision and dralnage in acute osteomyelitis. In chronic osteomyelitis the treatment should consist chiefly of removal of loosened sequestra. The discussion on this paper was opened by Dr. H. H. Hitchcock and continued by Dr. L. I. Oppenheimer and Dr. S. B. Fountaine.

Doctor Naffziger spoke on the subject "Observations on Injuries of Peripheral Nerves," showing lantern slides and moving pictures of cases. The doctor discussed injuries to peripheral nerves demonstrating the type and extent of paralyses emphasizing particularly changes brought about by injury to the musculospiral, the circumflex, and facial nerves. He laid great emphasis on the fact that surgery should be done as soon after injury as possible in order to prevent fibrosis. He advised splinting of paralyzed muscles, removing splints once in twelve hours for passive motion, massage, and electric physiotherapeutic treatment. Doctor Naffziger's paper was discussed by Dr. Warren B. Allen and Dr. F. J. Carlson.

GERTRUDE MOORE, *Secretary.*

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CONTRA COSTA COUNTY

The regular meeting of the Contra Costa County Medical Society was held in Richmond at the offices of Doctors Abbott, Hedges and Hely, on October 29, 1927, being called to order by President McCullough.

An interesting talk on "Fractures of the Long Bones" was given by Doctor Cleary illustrated by models of various splints devised by himself and

others as a result of World War experience. Doctor Cleary imparted a number of useful tips regarding the handling of these fractures. Many questions were asked and answered, and the talk was greatly enjoyed by all present.

The Constitution and By-Laws were read and adopted, and the secretary was instructed to have them printed for distribution.

The date for the annual banquet was set for November 12.

The question of patients able to pay for medical care being treated free of charge in the large clinics was brought up. The consensus of opinion was that each individual physician should report to the Social Service of such clinic any such cases coming under his notice. It was pointed out that where thousands of patients are being handled it is physically impossible to thoroughly investigate each case.

S. N. WEIL, *Secretary.*

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KERN COUNTY

The October meeting of the Kern County Medical Society was held at the Kern General Hospital Thursday, October 20. The meeting was called to order by Doctor McClain, president. The minutes were read by Doctor Jones, secretary. As there was no correspondence, Mr. Brown, representative of the Department of Agriculture, was introduced. Mr. Brown explained very thoroughly the system of inspecting and grading milk to be used if accepted by the Board of Supervisors.

A resolution was passed to appoint a committee to draw up an ordinance to be brought before the Supervisors on Monday the 24th relative to inspection and grading of milk. Committee: Doctors Compton, Bell, and Jones, chairman. Thanks were extended to Mr. Brown.

Doctor Reed of the Orthopedic Hospital, Los Angeles, was introduced. He gave a very interesting paper on "Poliomyelitis" and its treatment. Refreshments were then served in the banquet room, and later two reels from the Orthopedic Hospital, Los Angeles, were shown illustrating the treatment given such cases. Doctor McClain thanked Doctor Reed in behalf of the Kern County Medical Society.

The regular meeting of the Kern County Medical Society was held at the Kern General Hospital, November 17. In the absence of Doctor McClain, president, the meeting was called to order by Doctor McKee, past president. The minutes were read and approved as read. The following doctors were elected to office for the coming year: Dr. Robert M. Jones, Bakersfield, president; Dr. P. F. Page, Taft, vice-president; Dr. J. M. Kirby, Bakersfield, secretary-treasurer; Dr. Francis Hamlin, delegate; Dr. Joe Smith, alternate.

The following committees were appointed:

Auditing Committee—Dr. C. A. Morris, Dr. William H. Moore.

Annual Banquet—Dr. L. H. Fox (chairman), Dr. George E. Bahrenburg, Dr. J. M. Kirby.

Dr. Fred R. Fairchild, Woodland Clinic, was introduced. He gave a very interesting talk on "The Most Important Single Factor in Surgery." Dr. John D. Larson, Woodland Clinic, discussed the importance of a definite routine in diagnosis. Dr. Schuyler D. Pulford discussed and illustrated the importance of modern conformation and diagnosis. Thanks were extended to the doctors for their interesting talks. The meeting adjourned to the banquet room, where light refreshments were served.

ROBERT M. JONES, *Secretary.*

PLACER COUNTY

The Placer County Medical Society held its annual meeting at the Masonic Hall, Auburn, Saturday evening, November 12, at 8 p. m., the president, Dr. J. A. Russell, presiding.

There were present the following members and visitors: Members—J. A. Russell, C. J. Durand, J. G. Mackay, W. M. Miller, R. F. Rooney, M. E. Thoren, C. C. Briner, M. S. Briner, G. H. Fay, C. E. Lewis, R. A. Peers. Visitors—Doctor Gibbs and Doctor Rasor of Weimar, Dr. H. N. Kanner and Dr. Dudley A. Smith of San Francisco.

The following officers were elected to serve the society for 1928: R. J. Nicholls, president; J. Gordon Mackay, vice-president; R. A. Peers, secretary-treasurer; C. J. Durand, associate secretary; C. E. Lewis, delegate; J. A. Russell, alternate.

Dr. Szabo Kalman of Roseville, who transferred from Siskiyou County, was elected a member of the Placer County Medical Society.

Resolutions on the death of Dr. Orren L. Barton of Loomis were presented, and a committee consisting of Doctors Fay, Mackay, and Durand, were appointed to draft resolutions on the death of the late Dr. S. H. Rantz of Placerville.

Dr. Robert F. Rooney of Auburn, dean of the medical profession of Placer County, gave a very interesting talk on practice in Placer County in pioneer days and displayed and explained the use of various instruments in his surgical case of that period.

Dr. Harry N. Kanner of the University of California Hospital staff then gave an address on "The Demonstration of Forceps with a Mannequin." Doctor Kanner gave a short history of the origin and development of obstetrical forceps and, after showing the various types of forceps now used, gave a demonstration of the application of the forceps in the various presentations. Doctor Kanner's address and demonstration were very complete and of great interest.

Dr. Dudley A. Smith of the University of California Hospital staff then addressed the society on the "Importance of Technique in Rectal Examinations." The doctor stressed the importance of a thorough anal, rectal and sigmoid examination. He gave a brief description of the symptomatology of pathology in the lower bowel followed by an outline of treatment for the more common and some of the rarer disease conditions. Following his address Doctor Smith gave a lantern slide demonstration illustrating the anatomy of the lower bowel and surrounding tissues, followed by other illustrations showing in detail his modification of the Coffey operation for cancer of the rectum. Later Doctor Smith showed the various instruments used by him in the operations described. Doctor Smith's paper was very practical and was the subject of general discussion.

There being no further business the meeting adjourned.

ROBERT A. PEERS, *Secretary.*

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SACRAMENTO COUNTY

The October meeting was held in the Empire Room of the Hotel Sacramento on the evening of October 18. There were forty-two in attendance. In addition, we had the pleasure of being host to the president of the California Medical Association, Percy T. Phillips. Doctor Phillips was meeting here with the State Board of Medical Examiners and brought with him two members of the board, Doctors Smith and Morton. The minutes of the previous meeting were read and approved.

Case Reports—Frank P. Brendel presented two patients. Both had suffered fractures of the os calcis. In both instances Brendel had used tibial bone grafts to hold the fragments.

William A. Beattie reported a case of spina bifida. In this instance the meningoceal type has been oozing

spinal fluid since birth. The baby is now 4½ months old and is thriving. The interesting feature here is the fact that the baby has escaped infection during all this time.

Joseph E. Yates reported the removal of a true myoma of the uterus.

For our evening's program we heard from Charles E. Schoff and William A. Beattie. Both doctors had recently returned from Europe and told us of their contacts there.

Schoff stressed the diagnostic acumen of the French physicians and thoroughly explained their system of conducting clinics as exemplified by the Saint Louis Hospital. One of Schoff's main desires during the trip was to study the work of Sabouraud. He found Professor Sabouraud now engaged entirely in the treatment of diseases of the hair and scalp. He has hundreds of patients under treatment for ringworm by means of x-ray. He provokes epilation and, by the way, is still using gas tubes. The reception of an inquiring American by English and Scotch physicians is all that can be asked for. It seems as though they never tire of trying to give you everything they have.

Beattie was particularly interested in hospital organization. He found this phase of medical care in Vienna to surpass, by far, that of Paris. The Viennese are at present stressing, to the extreme, early recognition of incipient tuberculosis. That disease is rampant in Vienna. Beattie came in contact with several outstanding men; Professor Bauer and his work with the endocrines was one of these.

Andrew W. Morton of San Francisco was called upon by Smith McMullin to add a few words on European impressions. Morton spoke briefly and expressed the opinion that the thoroughness of the German surgeon is not surpassed.

Application for Membership—The first reading of the applications of Oliver H. Perry, W. J. Vandenberg, and James Travis Vance were read for the first time. After the second reading of the applications of Louis Gouguet, Raymond Primasing, and Max C. Isoard, a vote was taken. All were elected to membership.

The board of directors reported the transfer of Vernon F. Kennedy to Phoenix, Arizona.

They approved the four new amendments to the Constitution and By-Laws.

The new amendments to the Constitution and By-Laws, which included (1) a method for amending the by-laws: (2) a new ruling on the length of residence of an applicant for membership as well as a check on the constant resubmission on a rejected application; (3) a proviso for the election of a transfer member from the floor rather than through the board of directors; and (4) new regulations as to the dropping of a member for non-payment of dues and assessments were unanimously adopted.

The meeting adjourned to a buffet lunch.

BERT S. THOMAS, *Secretary.*

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SAN BERNARDINO COUNTY

Minutes of the San Bernardino County Medical Society meeting held at the San Bernardino County Hospital, November 1, 1927.

The minutes of the previous meeting were read and approved.

Communications were read regarding new members, poliomyelitis serum, and the fall meeting of the Southern California Medical Association.

The following three men were admitted into the society: Dr. C. E. Counter of Loma Linda, Dr. Marcus D. White and Dr. Wallace M. Chapman of Ontario.

The election of delegates to the state medical meeting resulted in the appointment of Doctors Moseley and Richards with alternates, Doctors Eytinge and Walter Pritchard.

There were thirty-four members present.

The program of the evening was then entered upon. It consisted of: "Rectal Constipation." Autochrome lantern slides of anorectal pathology. By A. J. Murrieta. Doctor Dole opened the discussion.

Luncheon was served at 10:30.

Meeting adjourned.

E. J. EYTINGE, *Secretary.*

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SAN DIEGO COUNTY

The monthly dinner of the medical society on October 11 brought a generous attendance at the Golden Lion where, after an excellent repast, the following program by home talent was presented:

"Acrodynia with Report of Case"—Rieta C. Hough.

"Recent Advances in Radiation Therapy"—Lyell C. Kinney.

Doctor Hough's paper on this comparatively rare condition was well presented and gave a comprehensive summary of the present knowledge of the subject as well as the theories as to its causation. Doctor Thornton discussed the paper at some length.

Doctor Kinney's lantern talk on the advances in the treatment of various conditions by radiation was a masterly discussion. Avoiding controversial subjects, the doctor clearly expressed the conditions in which radiation had proven itself of unquestioned value with or without the cooperation of surgery. One must be impressed with the ever broadening field of usefulness developed in this comparatively recent branch of therapy. This paper was discussed by Doctors Churchill, Weiskotten, Clark, Geistweit, Andrews, and Belford. The evening was a distinct scientific treat.

The staff of the Scripps Memorial Hospital met Tuesday evening, November 1, for routine business. Doctors Lazelle and Smith presented an unusual case of ulcer of the stomach which baffled diagnosis for a time.

Dr. Thomas O. Burger, recently returned from the East, discussed informally the surgery of the vascular system, dwelling especially upon the newer technique of embolectomy and the obliteration of varicose veins by injections of irritating substances.

The Scripps Metabolic Clinic has completed plans for the erection of a new building of much greater capacity than the present one. Its phenomenal success in the short time it has been in operation demands this expansion.

The election on November 8 resulted in the following officers of the medical society for 1928: J. M. McColl, president; L. H. Redelings, vice-president; W. H. Geistweit, Jr., secretary; Willard H. Newman, treasurer. Councilors: A. E. Elliott, E. C. Lee, W. W. Belford. Milk Commission: O. B. Cordua. Delegates to State Society: Mott H. Arnold, Thomas O. Burger, Will H. Potter. Alternates: C. E. Howard, F. L. Macpherson, C. E. Rees. Directors of Telephone Exchange: Martha Welpton, one year; J. H. Young, two years; Will H. Potter, three years.

On the evening of election day the society dined at the Golden Lion Tavern, following which an excellent program was provided by home talent:

"Influenza and Its Relation to Tuberculosis"—M. M. Doria.

"The Esophagus and Air Passages"—Charles W. Brown.

Doctor Doria's paper was a strong plea for the consideration of influenza as a serious disease, possible of many complications and sequelae in the course of which consultation should more often be sought than

is customary. The disease is not being taken seriously enough.

Doctor Brown presented a series of case histories well illustrated by radiographs showing the vagaries of foreign substances in the air passages.

Both of these papers were liberally discussed, demonstrating that well-prepared offerings by home doctors are not only appreciated but draw free discussion. Let us have more of them.

ROBERT POLLOCK.

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SAN JOAQUIN COUNTY

The stated meeting of the San Joaquin County Medical Society was held at the Medico-Dental Club Hall, corner North Sutter and Miner Avenue, Thursday evening, November 3, 1927, Dr. J. W. Barnes presiding. The meeting was called to order by the president at 8:30 p. m. Thirty-two were in attendance. Those present were: Drs. S. R. Arthur, J. W. Barnes, E. L. Blackmun, J. F. Blinn, H. J. Bolinger, C. A. Broaddus, H. S. Chapman, Fred J. Conzelmann, J. T. Davison, C. F. English, William Friedberger, E. C. Griner, S. Hanson, C. D. Hollinger, J. P. Hull, H. E. Kaplan, S. E. Latta, R. T. McGurk, F. G. Maggs, B. J. Powell, D. R. Powell, S. F. Priestly, G. H. Rohrbacher, George H. Sanderson, J. J. Sippy, Margaret H. Smyth, Hudson Smythe, C. V. Thompson, I. B. Thompson, G. J. Vischi, B. G. Walker, and M. P. Shaughnessy, attorney at law, guest and speaker of the evening.

The minutes of the previous meeting were read and approved. A communication from Dr. R. C. Kirkwood, director of Bret Harte Sanatorium at Murphy, the joint San Joaquin and Calaveras counties institution for tuberculosis patients, requesting that the society appoint from its members a committee of three to act as advisory in matters pertaining to the welfare of patients, was read. The secretary moved, seconded by Dr. Dewey R. Powell, that the Chair be authorized to appoint a committee of three as requested in Doctor Kirkwood's letter. The motion carried. The Chair appointed Drs. G. H. Rohrbacher of Stockton, H. J. Bolinger of Lodi, and E. W. Weirich of Angels Camp to serve on this committee.

The Chair declared nomination in order for directors and standing committees for 1928. In accordance with the Constitution, the Chair nominated the following twelve for directors: Drs. H. S. Chapman, Fred J. Conzelmann, J. F. Doughty, Linwood Dozier, F. G. Maggs, R. T. McGurk, Barton J. Powell, Dewey R. Powell, John J. Sippy, Hudson Smythe, Margaret H. Smyth, C. V. Thompson. From the floor were nominated J. W. Barnes, C. F. English, and G. H. Rohrbacher.

The following were nominated for standing committees in 1928:

Committee on Admissions: Drs. J. D. Dameron, J. V. Craviotto, E. F. English, J. P. Hull, and B. F. Walker.

Committee on Ethics: Drs. C. F. English, Margaret H. Smyth, Barton J. Powell, R. T. McGurk, and C. D. Hollinger.

Committee on Finances: Drs. J. V. Craviotto, Dewey R. Powell, and Fred P. Clark.

Committee on Programs: Drs. G. H. Rohrbacher, George H. Sanderson, and S. Hanson.

Delegates and alternates to State Medical Association for 1928:

Delegates: Drs. J. W. Barnes, Barton J. Powell.

Alternates: Fred J. Conzelmann, C. V. Thompson.

R. T. McGurk gave his report as chairman of the legal committee on county hospitals relations. The Chair introduced M. P. Shaughnessy, attorney at law and legal advisor of the society, who spoke on the laws governing county hospital and regulations pertaining to the admission of patients to these institutions in the state of California. He stated that county hospitals were established for the care, medical and surgical treatment of the poor and indigent sick and for no other purpose, and that the practice of admitting pay patients to county hospitals was contrary to law; and inasmuch as every county in the state is confronted with problems of a like nature as this society, it was his opinion that it was a problem for the California Medical Association rather than the concern of one county as the expense of having this evil corrected, would be too much for one county society to bear. The speaker suggested that there should be no cessation of efforts until the problem is definitely solved by the courts. He made the gesture that the society procure Dr. O. D. Hamlin, councilor for this district, and Hartley F. Peart, attorney at law and general counsel for the California Medical Association, as speakers to explain the various problems and difficulties of many of the County Medical Societies and their relations to county hospitals with reference to the care and treatment of the indigent sick. He felt it was a matter of educating the taxpayers to a realization of the situation and that it is to their interest to stop the admission of pay patients to county hospitals, for, as it now stands, the many are paying the hospital and medical service for a few who are perfectly able to pay for this service themselves, and these few are often depriving the poor and indigent sick of efficient hospital care to which they are lawfully entitled.

Dr. Barton J. Powell moved, seconded by Dr. S. Hanson, that the society avail itself of the service of Doctor Hamlin and Attorney Peart at a regular meeting of the society in the near future. The motion carried.

The Chair extended the thanks and appreciation in behalf of the society to the speaker of the evening.

Moved by Dr. Dewey R. Powell, seconded by Dr. J. P. Hull, and carried, that the meeting adjourn.

The meeting adjourned at 9:30 p. m.

FRED J. CONZELMANN, *Secretary.*

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SANTA BARBARA COUNTY

The regular meeting of the Santa Barbara County Medical Society was held in the staff room of the St. Francis Hospital on Monday evening, November 14, with President H. E. Henderson in the chair.

There were present at the meeting twenty-six members of the society and a number of guests.

Dr. A. S. Schwartz of Los Angeles gave a very interesting paper on "Punch Operations of the Prostate." This paper was discussed by Doctors Pierce, Thorner, and Spaulding.

Dr. R. R. Newell of San Francisco showed moving pictures of a beating heart. Diagrammatic comparisons were made of normal and abnormal heart beats.

It was moved, seconded and carried that this society invite the Southern California Medical Society to meet in Santa Barbara at its next meeting in April, 1928.

Expressions of thanks from Dr. Edward L. Markthaler and Mrs. Bagby and son for flowers sent during recent bereavements were read by the secretary.

There being no further business the meting adjourned.

WILLIAM H. EATON, *Secretary.*

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SISKIYOU COUNTY

The Siskiyou County Medical Society met for its regular meeting at Etna, October 30, and enjoyed the happy privilege of honoring Dr. E. W. Bathurst of Etna, who this month celebrates his fiftieth year of

continuous and active practice in Siskiyou County.

After the usual business had been transacted we were delightfully addressed by Doctor Bathurst, who related some of the incidents in his life's work as follows:

Dr. E. W. Bathurst, after receiving some training in Liverpool, England, and the French Colony of New Caledonia in the South Seas, graduated from the Medical College of the Pacific in 1877, and immediately thereafter came to Siskiyou County.

At that time the railroad out of San Francisco terminated at Redding, and the remainder of the journey had to be done by stage.

His destination was Sawyers Bar, where there were employed some three hundred miners. Here he located and remained until 1882 when he moved to Etna, and so for the past fifty years has been carrying on the practice of medicine in this county faithfully and well.

Among his coworkers in Siskiyou County at that time were Drs. D. Ream, H. Robertson, A. M. C. Smith, Newton, and Hill.

Roads throughout the county were in a decidedly embryonic stage, mere pathways, and therefore travel was mostly by horseback.

Doctor Bathurst told us that his equipment at that time consisted of a stethoscope (probably the only one in the county), a thermometer, a hypodermic outfit, an obstetrical kit, and an amputation set.

This was during the pre-Listerian period, and as most of the larger instruments were mounted with hard rubber handles, this of itself precluded boiling.

Asepsis and antisepsis were not known; a simple wiping of the instruments was sufficient to prepare them for the next case.

He stated that the medical fees were approximately what they are today, *i. e.*, $2 for an office visit, $2.50 town visit, $1 mileage, and obstetrical cases $25.

There were then practically no trained nurses in the county, the doctors doing or supervising the nursing of their patients.

Diagnosis had of necessity to be gleaned by careful and accurate bedside observation, palpation and auscultation, which was usually done by direct ear-to-chest method.

Laboratory aids consisted only of the heat and nitric acid test for albumin and the Fehlings test for sugar.

Novocain and cocain were just beginning to be used, and vaccines and antitoxins, except for variola, were unknown.

Among the various diseases which were quite prevalent in these early days, but which are becoming more and more infrequent, are variola, scarlet fever, summer diarrhea, and diphtheria.

Diphtheria epidemics were frequent and at times the odor from certain infested mountain towns could be detected a quarter of a mile away.

The treatment consisted of the infusion of golden seal and sage, together with honey and borax; massive doses of iron and calomel and local application of Loeffler's soln.

The mortality was surprisingly low and compared favorably with that of today, in spite of our obvious advantages.

The mortality in these epidemics was about 5 to 10 per cent.

The incidence of obstruction to the air passages was small.

The physicians were called upon to labor all day and on into the night, seeking shelter and rest wherever the opportunity afforded. They would ask to be called at a certain hour and would untiringly arise and continue on their "rounds."

Doctor Bathurst told interestingly of long, hard rides over mountains, through storms and snows, for the purpose of setting fractures, delivering offspring, or attending the sick.

He told of quaint Indian customs or habits as, for example, that of tying the cord to the thigh by means of a leather leash during the interval between the second and third stages of labor to prevent them from going back in for "the liver to eat up."

Doctor Bathurst is energetically carrying on an extensive active practice. He is hale and hearty and is beloved alike by countrymen and colleagues.

He is excellently well read on present-day medical or general topics alike, and furnishes a worthy inspiration to all his associates old and young.

At this meeting the following officers were elected for the coming year: Harold A. Morse, Hilt, president; W. H. Haines, Etna, vice-president; C. G. Reynolds, Yreka, secretary-treasurer.

Two new members were elected to the society as follows: Clyde G. Reynolds, Yreka; Dave F. Dozier, Weed.

The meeting, which was opened in honor of Doctor Bathurst, was closed by a standing vote of reverence and remembrance for Dr. C. W. Nutting, Sr.

HAROLD A. MORSE, *Secretary.*

TULARE COUNTY

The regular monthly meeting of the Tulare County Medical Society was held at Motley's Café in Visalia, following dinner at 6:30 p. m.

In the absence of President Zumwalt and Vice-President Paine the meeting was called to order by Secretary Campbell.

Members present were: Doctors Groesbeck, Bond, Preston, Betts, Brigham. Kahn, Campbell, Lipson, Ginsburg, Seligman, Furness, Rivin, and Weiss.

It was voted to renew our group subscriptions for two years to *Hygeia* magazine, which we placed in most of the libraries of Tulare County two years ago.

Dr. Frederick G. Linde, orthopedic surgeon of San Francisco, was present and spoke on Infantile Paralysis, with especial attention to its convalescent and late treatment. His talk was greatly enjoyed by all, and a vote of appreciation was given by the society for his address. Discussion followed.

Meeting adjourned at 10 o'clock.

H. G. CAMPBELL, *Secretary.*

CHANGES IN MEMBERSHIP

New Members—Alameda County—James Frug, Oakland; James R. Scott, J. Dwight Wilson, Berkeley.

Los Angeles County—Philip S. Burnham, E. M. Claiborne, Shuler Fagan, Harley F. Gunderson, H. H. Hattery, O. O. Hendrixson, Louis E. Martin, Wallace J. Miller, Robert E. O'Connor, Joseph C. Savage, Los Angeles; Robert M. Dodsworth, Azusa; Carl Gilbert Johnson, John F. Snedaker, Long Beach; Frank R. Morgan, Santa Monica; H. B. Rickabaugh, Alhambra; M. J. Rowe, Norwalk.

Orange County—Edward H. Brunemeier, Placentia; Kenneth H. Sutherland, Santa Ana.

Sacramento County—Louis Gouguet, Sacramento.

San Francisco County—George L. Baker, Cabot Brown, Frank M. Close, Thomas G. Dabney, Lawler A. Drees, Marion O. Grinstead, Fred D. Heegler, John H. Mansfeldt, George A. Wood, San Francisco.

Transferred Members—Harry M. Kanner, from Placer County to San Francisco County.

John W. Bardill, from Imperial County to Ventura County.

Vernon F. Kennedy, from Sacramento County, California, to Phoenix, Arizona.

Dave F. Dozier, from Sacramento County to Siskiyou County.

Clyde G. Reynolds, from Sacramento County to Siskiyou County.

DEATHS

Brooks, Clifford H. Died at Santa Ana, October, 18, 1927, age 42 years. Graduate Medical Department Iowa State University, 1910. Licensed in California, 1911. Doctor Brooks was a member of the Orange County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Bucher, William H. Died at Los Angeles, September 13, 1927, age 69 years. Graduate of the Medico-Chirurgical College of Pennsylvania, 1896. Licensed in California, 1912. Doctor Bucher was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

Crum, Robert L. Died at Los Angeles, October 26, 1927, age 47 years. Graduate of the Medical Department St. Louis University, Missouri, 1911. Licensed in California, 1911. Doctor Crum was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

Kistler, Samuel L. Died at Los Angeles, October 23, 1927, age 68 years. Graduate of the Starling Medical College, Ohio, 1882. Licensed in California, 1886. Doctor Kistler was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

Mansfeldt, Oscar. Died at San Francisco, October 30, 1927, age 61 years. Graduate of the Cooper Medical College, San Francisco, California, 1897. Licensed in California in 1898. Doctor Mansfeldt was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

McGinnis, George H. Died at San Diego, November 12, 1927, age 54 years. Graduate of the National Medical College, Illinois, 1898. Licensed in California, 1915. Doctor McGinnis was a member of the San Diego County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Ray, Daniel F. Died at Stockton, October 20, 1927, age 70 years. Graduate of the Medical Department, Vanderbilt University, Tennessee, 1888. Licensed in California in 1898. Doctor Ray was a member of the San Joaquin County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Watanabe, Junsai. Died at Los Angeles, September 9, 1927, age 66 years. Graduate of the Tokyo Medical College, Japan, 1897. Licensed in California, 1901. Doctor Watanabe was a member of the Imperial County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Winnard, Wellington Leroy. Died at Los Angeles, October 26, 1928, age 59 years. Graduate of Chicago Homeopathic Medical College, Illinois, 1890. Licensed in California, 1901. Doctor Winnard was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

OBITUARY

DR. MORRIS HERZSTEIN

Recently by death there was removed from the roster of California physicians a name that will endure.

Dr. Morris Herzstein was born in Cologne, Germany, August 20, 1854. He died in San Francisco October 25, 1927, in his seventy-fourth year. Concerning his boyhood he was peculiarly reticent, and of his early activities and experiences we have little interest further than that he was without material resources and dependent upon his own efforts to make his way.

He was graduated in medicine from an obscure school in 1881. He completed his education and received a degree from a German university a decade later. This was supplemented from time to time by travel and protracted residence in the medical centers of England and continental Europe. During these journeys he made many contacts, winning the respect and friendship of teachers and masters. With pleasure I quote a sentence from a letter by Professor Max Michaelis of Berlin of recent date which is clearly in evidence: "I often think of you, my dear friend, whose tenacity in search of knowledge was remarkable though at times you, the student, became the teacher."

Doctor Herzstein's advent in San Francisco forty-five years ago marked an epoch in the life of a character at once conspicuous, distinguished, eminently useful and unique. From the very outset he refused consistently to subscribe to the time-worn doctrine that progress is along the line of least resistance. His philosophy inspired him to face discouragement with patience, to overcome obstacles by courageous effort, and to lend a deaf ear to idle gossip. The currents and countercurrents that beset one's pathway in medical life he met with the deftness of a skilled mariner; purposeful, and with clear vision he set his course and reached his goal. Withal, in the language of one of his intimates, he was modest, kindly, generous, and tolerant above all things of everyone and everything.

Upon his return from Germany in 1891 he organized one of the first well-equipped clinical laboratories in San Francisco and installed therein a competent technician. This interest, generously provided for, be-

came his most valued helpmeet and was shared by many of his colleagues.

Doctor Herzstein's status in life was determined largely by unremitting toil and by the lasting friendships which were its fruitage: two factors inseparably interwoven. In his daily routine personal comfort, recreation, rest, were of small moment. Service, willing service, was his fetish. Friendships that were handed down through three generations were among his most cherished memories. It can be truly said that he was a humanitarian and philanthropist of high order. Throughout his career he sought opportunity to relieve want. His benefactions were manifold and without publicity. At the close of his life he disposed of a large estate with rare wisdom. A recent editorial commenting upon his will is in evidence: "Doctor Herzstein's will is a monument to his American patriotism as well as to his humanitarian instincts and educational enthusiasm. Everything that was his will remain in California. His art treasures go to a San Francisco museum and his money to a wide variety of charitable organizations. Stanford gets $100,000 for a chair of biology—a chair of the science that he wished to have taught scientifically and not with the Tennessee and Mississippi limitations. The University of California will receive approximately $500,000 for scholarships for students in medical research work and other purposes. Yes, the will proclaims the man."

UTAH STATE MEDICAL ASSOCIATION

COMPONENT COUNTY SOCIETIES

SALT LAKE COUNTY

The regular meeting of the Salt Lake County Medical Society was held in the Assembly Room, Medical Arts Building, Salt Lake City, Monday, October 24, 1927.

Meeting called to order at 8:08 p. m. by President W. G. Schulte. Eighty-four members and seven visitors were present.

The minutes of the previous meeting were read and accepted without correction.

There were no clinical cases.

First paper on the scientific program was entitled "Lung Surgery," by A. C. Callister, who limited his paper to chronic multiple suppurative bronchiectasis. He discussed the etiology, differential diagnosis, and stressed the importance of lipiodol injections. He described the various methods of surgical treatment and exhibited a patient on whom he had done a thoracoplasty for this condition with excellent results. His paper was illustrated by lantern slides.

This very interesting paper was discussed by F. F. Hatch, G. A. Cochran, and W. G. Schulte.

The second paper was entitled "Hysteria," by Foster J. Curtis. He gave his conception of the disorder and cited typical examples stressing the type of patient in which this disease occurs. He emphasized the necessity of a thorough physical examination to eliminate any organic lesion and also warned against malingering. He exhibited moving pictures of a patient in a hysterical seizure.

This very interesting paper was discussed by H. S. Scott and Garland H. Pace.

Through the courtesy of Mr. George Waters of the Salt Lake Photo Supply Company some official moving pictures of the World War were shown which were extremely interesting.

The secretary read a letter from F. H. Raley, chairman of the Board of Censors, relative to the application of Orin A. Ogilvie, who was ineligible to membership because he has not been licensed by the state of Utah. The secretary moved that he be made an honorary member. This was discussed by T. C. Gibson and W. H. Beer, who moved a committee be appointed to investigate and report. Seconded and carried. The Chair appointed Sol G. Kahn, chairman, and F. B. Steele and T. C. Gibson as the members of the committee.

T. C. Gibson reported progress for his committee to investigate liability insurance.

Adjournment at 10:10 p. m.

The regular meeting of the Salt Lake County Medical Society was held in the Assembly Room of the Medical Arts Building, Salt Lake City, Monday, November 14, 1927.

Meeting called to order at 8:10 p. m. by President W. G. Schulte. Sixty-three members and eight visitors were present.

An acephalic six months' fetus was presented by G. N. Curtis, who discussed the condition.

J. W. Aird of Provo gave a short talk on an original new method of effectively closing tense upper abdominal wounds. He also gave a talk on Lane's kink, stressing the importance of looking for it in all cases of chronic appendicitis. He estimated that the condition was present in 25 per cent of his cases with that disease.

These interesting talks were discussed by L. J. Paul, Clark Young, and E. F. Root.

"Compression Fractures of the Tibia" was the title of the paper read by C. E. McDermid of Castle Gate. He reviewed the literature on this relatively rare condition, described the method of production, symptoms, diagnosis, prognosis, emergency and subsequent treatment, and reported five cases. His subject was covered very thoroughly and was presented in a masterly manner.

This excellent paper was discussed by S. C. Baldwin, F. S. Bascom, J. W. Aird, E. F. Root, L. N. Ossman, A. L. Huether, H. C. Holbrook, and M. C. Lindem.

T. C. Gibson reported for his Committee to Investigate Liability and Insurance. He explained the difference in the insurance clause between the policies issued by the Aetna and U. S. F. and G. companies and recommended that a legal opinion be obtained interpreting the clause in the latter policy. This was discussed by W. F. Beer, John Z. Brown, A. C. Callister, T. F. H. Morton, T. C. Gibson, E. F. Root, and L. J. Paul, who moved that the report be accepted except that part requesting legal opinion. Seconded. Discussed by E. F. Root, M. C. Lindem, M. M. Nielson, and C. J. Albaugh. Motion carried.

John Z. Brown moved that the society request that the Medical Arts Building furnish a blackboard. Seconded and carried.

The report of the committee appointed to determine whether or not Dr. O. A. Ogilvie could become an honorary member was read by the secretary. John Z. Brown moved adoption of the report. Seconded and carried.

The secretary read a communication from Judge Harold M. Stephens requesting the appointment of a committee to confer with a committee of dentists and the executive committee of the Community Clinic relative to clinic affairs. Sol G. Kahn moved that this committee be the one recently appointed to investigate charitable institutions of which William T. Ward is chairman. Discussed by F. B. Steele. Seconded and carried.

William F. Beer announced that the banquet in honor of the dentists would be held November 15, 1927. He then moved that the by-laws of the society be changed in order to raise the dues from $10 to $15. Seconded. J. P. Kerby moved that the society pay any deficit that may be incurred in giving the dental banquet. Seconded. Discussed by M. C. Lindem. F. B. Steele moved to amend the motion so that the society would pay any deficit incurred binding the library magazines. This amendment was ruled out of order by the Chair. Further discussion by T. C. Gibson and H. C. Holbrook. Motion was carried.

Adjournment at 10:10 p. m.

M. M. CRITCHLOW, *Secretary.*

MISCELLANY

From time to time in this department of California and Western Medicine, appear columns grouped under the following headings: Comment on Current and Recent Articles in this Journal; News; Medical Economics; Readers' Forum; California State Board of Health; and California Board of Medical Examiners. For Book Reviews, see index on the front cover, under Miscellany.

NEWS

Sacramento Hospital—We have just been notified that the Sacramento Hospital has been approved by the Council on Medical Education of the American Medical Association for intern training.

Once More: Member-Fellowships—The attention of members is again called to Fellowships in the American Medical Association. Of the 4328 members of the California Medical Association in 1927, 3299 are Fellows of this national association.

Any member who desires to secure a Fellowship can obtain from his county secretary, or from the office of the state secretary, 1016 Balboa Building, 593 Market Street, San Francisco, the approved application blank for Fellowship. This application must be signed by the state secretary and be accompanied by a check to the American Medical Association for $5.—*A. M. A. Bulletin.*

New Director for Desert Sanatorium—The Desert Sanatorium announces the appointment of Dr. Roland A. Davison, formerly chief of the division of gastroenterology and metabolism at the Letterman General Hospital, San Francisco, California, as assistant medical director.

Northern California Association of Physiotherapists—The association maintains a registry bureau under the direction of Miss Hilda Knaisenberger at Hahnemann Hospital. The registry bureau is for the doctor who wishes to obtain the well-trained ethical technician as his assistant.

Under the reorganization the association has chosen as the officers: Hazel E. Furscott, president; Margaret Stevenson, vice-president; Florence Burrell, secretary and treasurer.

Drs. Morton Gibbons, Ernest W. Cleary, and Howard Naffziger comprise the Medical Advisory Committee.

The Northern California Association of Physiotherapists had its first meeting Wednesday evening, September 27, at dinner in La Casa Alta, 442 Post Street.

This meeting was the first program meeting of the new organization. Dr. Frank B. Granger of Harvard Medical College, Boston, Massachusetts, and a member of the Physiotherapy Council of the American Medical Association, was the speaker of the evening.

He spoke of the work of the council which has been established by the American Medical Association to get at the truth about physiotherapy procedures; to set standards of training technicians; to train doctors to intelligently prescribe physiotherapy, and to standardize equipment. The council has already published reports on window-glass substitutes for transmitting the sun's ultra-violet rays.

Doctor Granger discussed the relative value of the ultra-violet rays from the sun, the mercury quartz vapor lamp, and the carbon arc lamp. Experiment has shown the mercury quartz lamp treatments to be most efficacious and expeditious, even more so than direct sun rays.

The meeting resolved itself into a discussion which included the after treatment of poliomyelitis, hemiplegia, the athletic group of injuries, neuritis, and low-back strain.

The Physiotherapy Association has as its plan for the winter the following program:

November 9—Electrotherapy—Dr. Howard Plank.
February 8—Demonstration of Technique at Stanford University—Dr. H. Langnecker.
April 11—A Trip Through the Equipment Shops.
May 1—The Annual Meeting at Sacramento.

The Leslie Dana Gold Medal, awarded annually to the person who has done most for the conservation of vision in the preceding year, was presented in St. Louis on October 17 to Dr. Lucien Howe of Buffalo, New York, by Lewis H. Carris, managing director of the National Committee for the Prevention of Blindness. Doctor Carris said that Doctor Howe was responsible for the first law on preventing ophthalmia neonatorum, the Howe Law, passed in 1890 in New York State. Similar laws making it obligatory for midwives, doctors and nurses to report promptly all cases of ophthalmia neonatorum observed, and a law requiring the use of prophylactic drops in the eyes of all new-born babies have since been enacted in almost every state in the union.

The last meeting of the Southern California Medical Association was held in the Beaux Arts Building, San Bernardino, Friday afternoon and evening, Saturday morning, afternoon and evening, November 24-25.

A special meeting of the Board of Councilors and additional men was held at the Curtisy Tea Rooms in San Bernardino on Friday, October 7, 1927, at noon. The question of the proposed change in the present method of admitting patients to the County Hospital was thoroughly discussed. The following recommendation was finally determined upon: "That the Board of Supervisors be requested to appoint a committee to consider this matter. The committee to number eight."

One representative from each district appointed by its own supervisor. It is expected that these will be laymen. One to represent the County Hospital, Doctor Meyer; one to represent the County Medical Society; and one to represent all the private hospitals in this county.

This committee would investigate from all angles and obtain testimony from every class or person involved and then submit its findings to the Board of Supervisors.

Pending the submitting of this report it is suggested that the superintendent of the County Hospital be empowered to modify at his own discretion the present order regarding acceptance of fees and the admittance of only charity patients to the County Hospital.—Program of San Bernardino County Medical Society.

Dr. A. K. Dunlap of Sacramento was recently elected president of the Northern California District Medical Society at its forty-third semi-annual meeting held in Stockton, October 25.

Dr. Corneille Heymans—A special lecture will be given on "Contributions to the Physiology and Pharmacology of the Cardio-Inhibitory and Respiratory Centers" by Dr. Corneille Heymans, extraordinary professor of pharmacology, faculty of medicine, University of Ghent, on Wednesday, December 7, at 8

p. m. in Lane Hall, Sacramento Street corner of Webster, San Francisco. The lecture will be illustrated with lantern slides. All members of the profession and medical students are cordially invited to attend.

Noted Viennese Visits U. C. Campus—Sigmund Fraenkel, professor of medical chemistry at the University of Vienna, who has come to America to deliver a series of lectures before medical research groups, is stopping his tour for a month to carry on some research work in the laboratories of the University of California in collaboration with Professor Herbert M. Evans of the anatomy department.

While in Berkeley, Professor Fraenkel will deliver a series of five public lectures on the theory of synthetic remedies, on November 21, 23, 28 and 30, and December 2, in room 110 of Wheeler Hall.

Professor Fraenkel has had a distinguished career, especially in the relations of organic chemistry to medicine. As a young man he worked with such noted authorities as Eugen Baumann, Oswald Schmiedeberg and Franz Hofmeister in biochemistry and pharmacology. He has written a book which has now gone into a sixth edition, because it is the only important and comprehensive text in its field.

He is an outstanding authority on the relation of the chemical make-up of substances to their action on living tissue. The important phase of his work is an attempt to develop synthetic organic chemicals which have an ideal action on living tissue for definite purposes, such as local anesthesia or relief of pain.

His chief work has been on the chemistry of proteins; on the chemistry of nervous, especially brain, tissue; on the chemistry of vitamins, especially a method for the quantitative determination of vitamin B, and on the chemistry of the internal secretions of the endocrine glands, in which field he is now working with Doctor Evans.—*U. S. Clip Sheet,* November 22, 1927.

MEDICAL ECONOMICS

State to Care for Crippled Children—The following extract from the Crippled Children Act of 1927 indicates the scope of the work to be undertaken by the California Department of Public Health in the care of crippled children:

"The State Department of Public Health shall have the power and it shall be its duty to seek out needy physically defective or handicapped persons under the age of eighteen years by local surveys arranged through local lawful authorities, social welfare and other public and private agencies; provided, that no record shall be taken and/or kept except of such children as are specified in this section.

"It shall likewise have the power and it shall be its duty to arrange through such local agencies for local public diagnostic clinics or conferences for such physically defective and handicapped persons, when and where it shall appear necessary and bring to such persons expert diagnoses near their own homes.

"Whenever the parents or guardian of any such physically defective or handicapped person shall be unable, in whole or in part, to furnish for such child or ward, resident of the state, necessary surgical, medical, hospital, physiotherapy, occupational therapy and other service, special treatment, materials, appliances and their upkeep, maintenance, care and transportation, the parents or guardian may petition the Superior Court of the county wherein such parents or guardian is or are resident for a certificate setting forth such fact, and if the judge is satisfied that the parents or guardian is or are unable, in whole or in part, to furnish such services, treatment, materials, or appliances and their upkeep, or such maintenance, care and transportation, he shall issue a certificate to that effect. Such certificate shall be presented to the State Department of Public Health and it shall be its duty to furnish, in whole or in part, such services, transportation, materials, or appliances and their upkeep, such maintenance, care and transportation as in its judgment are necessary and proper, the expense thereof to be advanced by the State Department of Public Health out of a revolving fund appropriated for that purpose. Provided, however, that the State Department of Public Health may pay the same out of any funds received by it through gift, devise, or bequest, without the possession of such certificate. All moneys expended under the authority of such certificate, as herein provided, shall constitute a legal county charge against the county from which such certificate is issued. Upon presentation to the Board of Supervisors of the county in which such certificate was issued, of an itemized claim, duly sworn to by the secretary of the State Department of Public Health, for the expense of the above set out services, transportation, materials, appliances and their upkeep, care and maintenance and furnished under the authority of said certificate, said Board of Supervisors shall audit and approve said claim, and the county auditor of said county, shall thereupon issue a warrant for the amount thereof payable to the State Department of Public Health, and the county treasurer shall pay the same."—Weekly Bulletin, California Department of Public Health.

New Orleans Legislature Limits Service of County Hospital to Indigent Poor—The last legislature passed an act which gave the New Orleans Charity Hospital the right to give free medical service to only those unable to pay for it, thereby attempting to stop an abuse which has existed since the foundation of this institution. That the physician should be exploited for the power that he had became so well an established custom in Louisiana that it led some to publish what they considered an economic fact, viz., that it was cheaper to give applicants medical attention without questioning their ability to pay than to investigate. The objectors probably either had the idea that the population as a whole was poverty stricken, or a groceryman should give credit to everyone, if he wants to be successful financially.—*Western Medical Times.*

Recent Legislation Concerning Establishment of County Hospitals—During the last session of the Florida Legislature, Senate Bill No. 10 was passed and approved by the governor on April 23, 1927. This is an act which enables certain counties to establish county hospitals. It affects only those counties which showed a population of from thirty to sixty thousand inhabitants according to the 1925 census. These counties are Alachua, Escambia, Jackson, Orange, Palm Beach, Pinellas, and Volusia.

The bill specifies that the Board of County Commissioners shall submit the question to a vote when petitioned by five hundred voters from that county. Bonds may also be voted and a tax assessed for the support and maintenance of the County Hospital. The act provides for the creation of a board of hospital trustees and specifies their duties.

The provisions of the act designate the hospitals as institutions to take care of both charity and pay patients.

The attention of the medical societies in the counties affected by this act is directed to the provisions. It is suggested that the matter be discussed at the meetings of county medical societies with the view of determining the need of such an institution in their counties.

Palm Beach has already organized and plans to have a County Hospital if a bond issue can be obtained at the next election. Any support that can be given to this project by organized medicine will doubt-

less repay the effort many times over through the increased conveniences and added facilities for proper medical care of private patients.—*J. Florida M. A.*

Predicting Epidemics of Plague in the Punjab—When plague is at its peak in the Punjab there is little recourse to anything besides vaccination to reduce the mortality. Vaccination being voluntary there is no demand for it except when there is an epidemic, and then the demand is proportionate to the gravity of the epidemic. The table below compares the monthly data relative to vaccinations for 1925 (year in which there was a moderate epidemic) with the corresponding figures for 1926 (year of severe epidemic). The figures in parentheses represent the monthly mortality.

Comparison of monthly vaccinations with monthly mortality (mortality figures in parentheses):

	Jan.	Feb.	Mar.	Apr.
1925	43,729	51,480	70,281	60,961
	(4,455)	(5,093)	(10,040)	(11,885)
1926	33,558	61,943	99,117	222,999
	(2,660)	(7,285)	(19,678)	(34,739)

As the mortality for April varies between 195,000 (1907) and 651 (1921), it is evident that the demand for antiplague vaccine fluctuates considerably. But antiplague vaccine as furnished by the Haffkine Institute requires four or five months for preparation and maturation, for the reaction caused by the inoculation of immature vaccine is severe enough to make it preferable not to use it at that stage.

Antiplague vaccine should be ordered at least four months in advance, or that needed during the epidemic period—March, April, and May—should be estimated in November of the preceding year. An estimate too low would be distressing, and one too high would be financially burdensome, for the vaccine costs $4000 per 100,000 doses. From this point of view alone the prediction of epidemics of plague is of considerable practicable importance.—*Pub. Health Rep.*

Report of the Committee on Insurance—The committee appointed at the meeting of the council of the Massachusetts Medical Society held October 5, 1927, to consider malpractice insurance of Fellows of the society has the following report to make:

In 1921 a blanket insurance policy against suits for malpractice, as issued by the United States Fidelity and Guaranty Company, was endorsed by vote of the council. In 1923 this group policy was given up and the same company issued individual policies for members only of the Massachusetts Medical Society. During these six years the company has satisfactorily handled nearly three hundred claims, all but a few of which were settled out of court. Of those suits that went to trial all were so well conducted that only one was lost. From the standpoint of the Massachusetts Medical Society and the individual members thereof the service rendered has been most gratifying.

From the viewpoint of the United States Fidelity and Guaranty Company, however, the experience has not been so satisfactory. The number of suits against physicians for malpractice has increased annually by geometrical progression until conditions at present are little short of alarming. A careful tabulation of claims settled shows that the company cannot continue to issue policies at the present rate. The same tables show that certain specialists in medicine are more liable to suits than are general practitioners. In order to meet changing conditions the company proposes, therefore, to equalize the burden and to proportion the cost of liability insurance by doing away with flat rate policies and issuing in their stead policies of unequal premiums varying according to the risks attached to different specialties.—*Boston M. and S. J.*

TWENTY-FIVE YEARS AGO *

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

From Volume 1, No. 2, December, 1902

From an article on "Pharmaceutical Standardization":

. . . A United States Senator, some years ago, when approached on the subject, stated that the medical and pharmaceutical professions could obtain any legislation they really wanted, if they were sure that they wanted it and acted as a concerted whole. Lack of organization has heretofore prevented any action looking toward the remedy of the present evils. . . .

From an article on "Organization Progressing":

. . . It is within our own personal knowledge that, whereas the sale of liquors, or even such harmless stuff as beer with its 2 per cent of alcohol, is prohibited amongst the Indians, various "patent" medicines are freely sold—and some of them contain as much as 44 per cent of alcohol. The spirit of medical progress is toward prevention—prophylaxis; yet, as the laws now stand, nothing can be done to touch the majority of these traders in lives. A thoroughly organized medical profession could wield an enormous influence; it could see to it that such men were elected to office as would promptly take action in the matter and force the faker out of business. . . .

From an article on "An Obvious Duty Before Wedlock":

. . . Let both contracting parties to a marriage thoroughly understand their marital and sexual obligations, the one toward the other; and if their parents have not sense nor courage enough to enlighten them, then let the "good old family doctor" step in and tell them what they should know. . . .

From an article on "Affiliation of the County Societies":

. . . The few county medical societies in the state that have not as yet organized under or complied with the provisions of the State Society for affiliation should do so without delay. . . .

. . . Formerly any medical society that adopted the Code of Ethics of the American Medical Association was considered in affiliation with that body and could elect delegates to it; now the conditions are altered. Organization is the only path for the regular physicians of the country to tread, and there must be no faltering, no backward tendency, no hesitation, no dragging up of old fights and petty squabbles. . . .

From an editorial on "A California Doctor to be Governor":

A majority of the electors of this state have placed their interests in the hands of a gentleman than whom no man in the ranks of the medical profession has shown a greater regard for strict medical ethics. Doctor Pardee has been a member of the State Society for many years and has shown much interest in its meetings and its aim; he has been in close touch with its members and has the respect of all and the love of many. The position in which he will be placed as Governor of California will be, to say the least, somewhat trying. . . .

From an editorial on "The Bubonic Plague Situation":

There are two equally important points from which the residents of the Pacific Coast states view the

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* Through this "Twenty-Five Years Ago" column, it is hoped to familiarize colleagues who in more recent years have joined the California Medical Association, concerning the activities and work of our state association, and of members who were active in the period two decades and a half remote. For older colleagues who were members twenty-five years ago, it has been thought that the references may recall incidents and associations which may be of interest or pleasure to momentarily dwell upon. To know what our predecessors fought for and accomplished should make for increased loyalty to the traditions and objects of our organization.

plague question. One is purely commercial and the other largely professional. The contention of the business man is that public utterances regarding the presence of the disease should be discouraged and prevented, if possible. They reason according to the old saying, that the truth should not be told at all times. They see only possible danger to the trade of the Coast, and decline to look into the future or take a serious view of what might one day develop into a national calamity. . . .

. . . If there is danger of the plague spreading, it becomes the duty of medical men to warn the public and to do all in their power to stamp out the disease upon its first appearance, and not wait until it obtains a foothold and becomes too strong to cope with. . . .

From an article by E. L. Wemple, M. D., on "Report of a Case of Bubonic Plague":

. . . Doctor Wemple, Jr., made a smear that afternoon, and the picture was very much like that of the disease. This smear was shown to Dr. H. A. L. Ryfkogle, and it was his opinion that it contained Bacillus pestis, there being a diplococcus infection as well. He said the inoculation of a guinea-pig from the contents of a gland and its death from plague was all that was necessary to make a positive diagnosis of bubonic plague. This was subsequently done by Dr. M. J. White of the United States plague laboratory, and the diagnosis was bacteriologically confirmed. . . .

. . . I am indebted to Dr. Howard Morrow, city bacteriologist, for the following report of his investigations. . . .

From the minutes of the "California Academy of Medicine":

. . . The president, Doctor Montgomery, called attention of the members to the great importance of the paper under discussion. He stated that plague cases had been found in five hospitals in the city, and there was no doubt that eventually it would appear in every hospital in San Francisco. . . .

. . . Doctor Hunkin said he had discussed the relative advantages of excision and amputation with Doctor Sherman and they did not agree. He had recently amputated a leg and found the femur entirely disorganized. At the ankle joint, or just above, the bone was so soft that it could easily be crushed with the fingers.

Doctor Sherman said the bone may be very soft, but not necessarily diseased, and many patients recover when all the diseased bone has been removed. . . .

. . . Doctor Rixford presented a patient upon whom he had performed a bloody reposition of an old luxation at the elbow. . . .

From an article by D. D. Crowley, M. D., on "Suturing of Muscles and Tendons":

. . . In the suturing of divided tendons I have come to the conclusion that it is not proper to use a large needle in a tendon. Neither do I think it expedient to pierce the ends of such tendons with needles, though the tendon is more accurately approximated at its wounded ends. . . .

. . . It is easier to suture with silk than with catgut. . . .

From the discussion on Doctor Crowley's paper:

. . . Dr. K. Pischel of San Francisco: I would like to suggest a suture I have used in my eye work with satisfaction. This suture is very thin and very strong and absorbable. The only drawback is that it is too short—length five to six inches—and I have had no difficulty in getting them. It is the tendon of the rat's tail. The preparation is simple. . . .

. . . Dr. T. W. Huntington of San Francisco: I have found the grafting of tendons of great utility in cases of ten to fifteen years' standing. I have always found the procedure to be of great utility and advisable, more so in these cases than in any other.. . .

From the December 9, 1902, meetings of the San Francisco County Medical Society:

. . . Doctor Spencer addressed the society as the retiring president. He said he desired to make a few comments, express a few hopes, and offer a few suggestions in the way of action for the future. . . .

. . . In conclusion, I would say that an effort should be made to have men of distinction in our profession from other sections come before us, read papers and join in our discussions. I do not mean to underestimate the abilities of our own members, but I think much good might be accomplished if we had members of other societies visit us from time to time. . . .

From the minutes of the thirteenth semi-annual meeting of the Southern California Medical Society, held at Pasadena:

. . . The meeting was called to order by President Dr. F. C. E. Mattison, who made an appropriate speech, after which an address of welcome was given by Dr. Norman Bridge, Pasadena. . . .

. . . The officers of the society are: Dr. F. C. E. Mattison, Pasadena, president; Dr. J. C. King, Banning, first vice-president; Dr. F. W. Thomas, Claremont, second vice-president; and Dr. F. D. Bullard, Los Angeles, secretary and treasurer. The committee on arrangements for this meeting was Dr. Stanley P. Black, Dr. James H. McBride, and Dr. Norman Bridge. . . .

From a press clipping on "Anti-Tuberculosis League":

. . . With the organization of the Southern California Anti-Tuberculosis League during the recent meeting of the Southern California Medical Association, a movement was formally inaugurated, the importance of which and the possibilities for good in southern California can hardly be overestimated. . . .

. . . This committee reported at the recent meeting in Pasadena, the result of which was the formal organization of the league, with Dr. F. M. Pottenger of Los Angeles as president. . . .

From the minutes of the thirty-second annual session of the Medical Society of the State of California, held at Golden Gate Hall, San Francisco, April 17, 1902:

. . . Whereas, The Mayor of the city of San Francisco has seen fit to remove the so-called "old" Board of Health; and

Whereas, The Chief Executive of the city has stated that he has determined, after prolonged personal investigation, that bubonic plague has never existed in San Francisco; and

Whereas, The position is absolutely unsupported by any competent, unprejudiced physician who has made personal examination of suspects or alleged cases of plague before or after death, or who has examined the bacteriologic evidence presented; and is further in direct conflict with the findings of the federal government experts and special commission; therefore be it

Resolved, That the Medical Society of the State of California emphatically condemns this action on the part of the Mayor of San Francisco, and at the same time endorses the position always maintained by the old Board of Health in its sanitary defense of the people of San Francisco and of the country at large. . . .

. . . The president-elect, F. B. Carpenter, was then escorted to the rostrum by Past President C. G. Kenyon and introduced to the assembly by the retiring president. After making a few felicitous remarks the minutes were ordered read, and were approved as read, and the society adjourned at 6:30 p. m.

GEORGE H. EVANS, *Secretary.*

CALIFORNIA BOARD OF MEDICAL EXAMINERS

By C. B. PINKHAM, M. D.
Secretary of the Board

At the annual meeting of the Board of Medical Examiners held in Sacramento, October 17 to 20, the following officers were re-elected for the ensuing year: P. T. Phillips, president; William R. Molony, vice-president; C. B. Pinkham, secretary-treasurer.

At the 1927 annual meeting of the Board of Medical Examiners held October 17 to 20, inclusive, the following changes were made in the status of various licentiates: Archibald A. Atkinson, M. D., probation for five years; William E. Brown (drugless practitioner), revoked October 18; Carleton W. Faull, M. D., revoked October 19; Homer J. Flinn, M. D., revoked October 19, federal and state conviction; Frederick K. Lord, M. D., certificate restored October 18, probation five years without alcohol permit; Ralph Newcomb, M. D., revoked October 20, narcotics; Alanson M. Pond, M. D., revoked October 19, narcotics; John H. Seiffert, M. D., revoked October 18, conviction illegal operation; William B. Shore, M. D., revoked October 19; George H. Wymann, M. D., restored October 17, probation five years without alcohol or narcotic permit.

Special Agent Carter recently reported that Mrs. Charlotte Anderson, Hollywood, on October 26, 1927, pleaded guilty to a charge of violation of the Medical Practice Act and was sentenced to sixty days in the city jail, suspended for two years on conditions that she does not violate the Medical Practice Act in the future.

Reports relate that on November 7 Martha Baker pleaded guilty to a charge of violation of the Medical Practice Act at Santa Monica and was given a suspended sentence of six months.

According to the San Francisco *Examiner* of November 10, Mrs. A. J. L. Bohannon, reported for some time as manager of the Pacific Cancer Institute, 5442 Telegraph Avenue, Oakland, pleaded guilty to a charge of violation of the Medical Practice Act and paid a fine of $100.

The "College of Enerology" is the newest addition to the long list of so-called colleges in California, its advertisement recently appearing in the San Diego *Union*, and reported as sponsored by Nelson C. Oakley, D. C., of the Clewell School of Chiropractic, A. McKay Jordan and James Rosedale, M. D. Fifty dollars is stated as the price for the complete course, following which will be issued the degree "Doctor of Enerology." The College Incorporation Bill (Chapter 152, Statutes 1927), now regulates degree-granting colleges in this state.

According to the San Francisco *Examiner* of November 10, 1927, Mrs. Ernestine E. Engelhardt, reported as conducting a Cancer Institute at 1000 Thirty-ninth Street, Oakland, pleaded guilty to a charge of violation of the Medical Practice Act and paid a fine of $100 ("News Items," October, 1927).

William L. Jones, M. D., of Oakland was placed on five years' probation at the October meeting of the board.

According to the Los Angeles *News* of October 1, 1927, the Appellate Court reversed the Superior Court judgment convicting Dr. Elmer W. Little, Los Angeles physician, of selling drugs to Miss Madge Surber, a morphin addict.

Reports relate Mrs. Minnie McCrimmon on November 3 pleaded guilty in the courts of Los Angeles to a charge of violation of the Medical Practice Act and paid a fine of $100, it being related that she used "the same 'plaster' system as was used by Emma McCrimmon in treating cancers—a system which recently caused the death of the mother of a Los Angeles police officer. . . ."

Under date of September 28 our special agent reports that Michael J. McGranaghan (licensed chiropractor referred to in "News Items" of February, March and October, 1927, in connection with the death of James McManus, six years of age, following the use of an anesthetic) was sentenced in the Superior Court of San Francisco to pay a fine of $100 or serve fifty days in the county jail for violation of the Medical Practice Act. "During the course of the trial the court would not permit any testimony to show that the reduction of a congenital dislocation of the hip was in fact surgery, withholding its opinion, however, as to whether or not such practice would be within the scope of a chiropractor, confining testimony only as to the giving of the anesthetic and having found the defendant guilty upon that evidence alone. . . ."

A doctor who prescribes narcotics without the specific purpose of allaying a disease is guilty of violating the Harrison Narcotic Law, according to a decision handed down here today by the United States Circuit Court of Appeals. The decision was rendered in the appeal of Dr. Milton A. Nelms of Walla Walla, Washington. Doctor Nelms was convicted and sentenced by the lower court to serve two years in a federal penitentiary and to pay $1000 in fine. He appealed on the ground that the Harrison Narcotic Act is unconstitutional.—*San Francisco Call,* October 11, 1927.

After a hearing by the Board of Medical Examiners at the October meeting, charges against Daniel F. Royer, M. D., aged Santa Ana physician, were dismissed.

Charges against Dr. Walter J. Sullivan, one of the defendants in the Ray Raymond death case here last spring, were dismissed in the Superior Court here today on motion of the District Attorney. Insufficient evidence on which to hope for conviction was the basis of the motion.—*Hollywood News,* October 28, 1927.

According to reports, Grace A. Thoreson on November 1 pleaded guilty in Los Angeles on a charge of violation of the Medical Practice Act and was given a sixty-day jail sentence, suspended for two years on condition that she does not violate the Medical Practice Act during her probation. It is related that she is another one of the many so-called cancer specialists and recently is reported to have obtained $240 for the treatment of a certain individual who, according to reports, when she finally came to the attention of a licensed physician was found to be beyond cure.

According to reports a jury in the Superior Court of Oakland engaged in the trial of K. Watanabe (a registered pharmacist conducting the C-Fu Drug Store), who had been charged with manslaughter following an abortion, disagreed and a new trial was set for December 12.

Blanche Dickerson is reported to have recently pleaded guilty to a charge of violation of the Medical Act at Santa Monica and sentenced to pay a fine of $100, said sentence being suspended for one year on condition of no further violation of the Medical Practice Act. Report of the special agent relates: "When we approached the place we glanced across a vacant lot and beheld the feet of a woman patient sticking out of an upstairs window, the table or couch on which she was resting extending out of the open window for a foot or so. . . ."

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CALIFORNIA AND WESTERN MEDICINE

VOLUME XXVII

JULY TO DECEMBER 1927

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CALIFORNIA AND WESTERN MEDICINE has grown to a size where it is no longer possible to bind the twelve issues of one year in the same volume. Therefore, two volumes a year, one from January to June, inclusive, and the other from July to December, inclusive, will be published, and each volume will be supplied with an index.

An ever enlarging circle of physicians who read systematically are finding the Cumulative Index published quarterly by the A. M. A., and sold for a nominal subscription, of incalculable value. Everything published in CALIFORNIA AND WESTERN MEDICINE, as well as other worthwhile medical magazines, is completely indexed in the "Cumulative" in a most complete author and subject index. To obtain a copy of this index, write to American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

KEY TO ABBREVIATIONS

Add.—Address.
Or.—Original Article.
C. R.—Case Report.
B. M.—Bedside Medicine.
M. T.—Medicine Today.
Ed.—Editorial.
B. R.—Book Review.

AUTHORS

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EDITORIALS

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

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